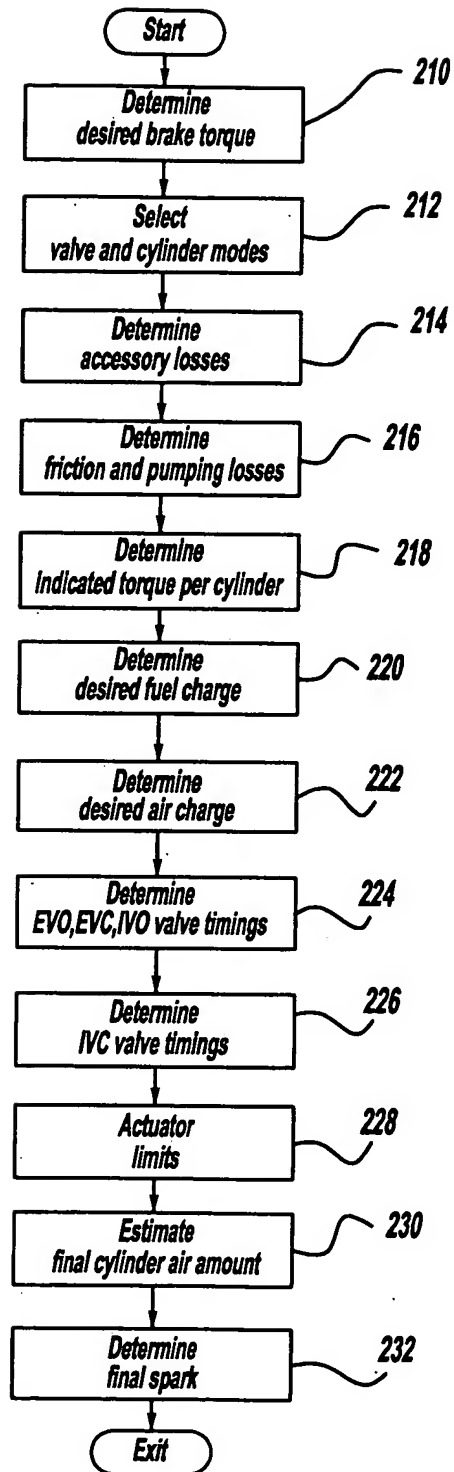
**FIG-1**

**FIG - 2**

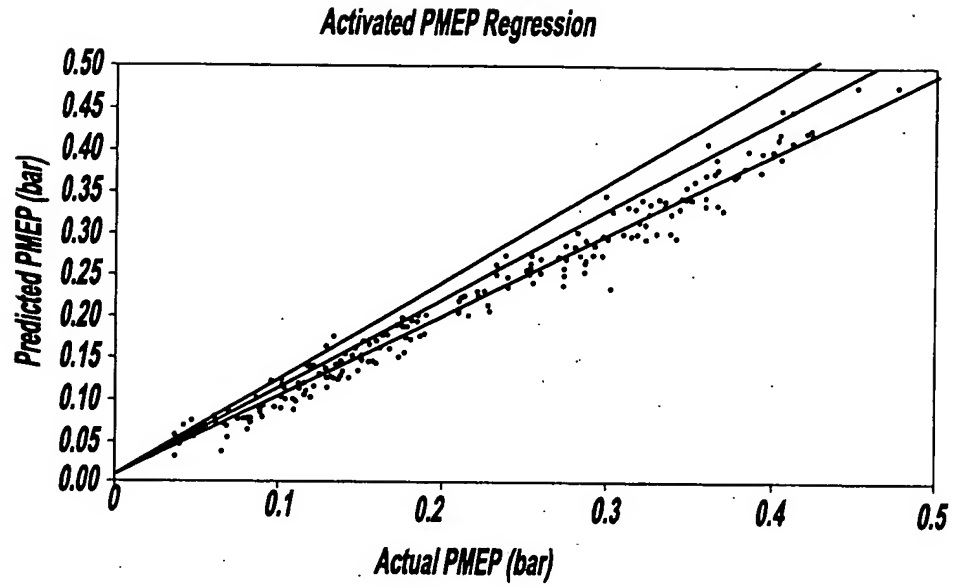


FIG - 3

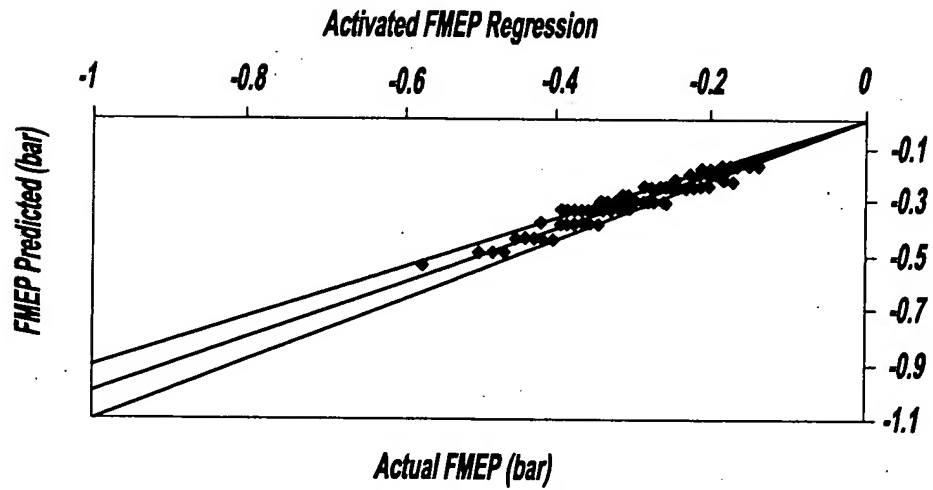


FIG - 4

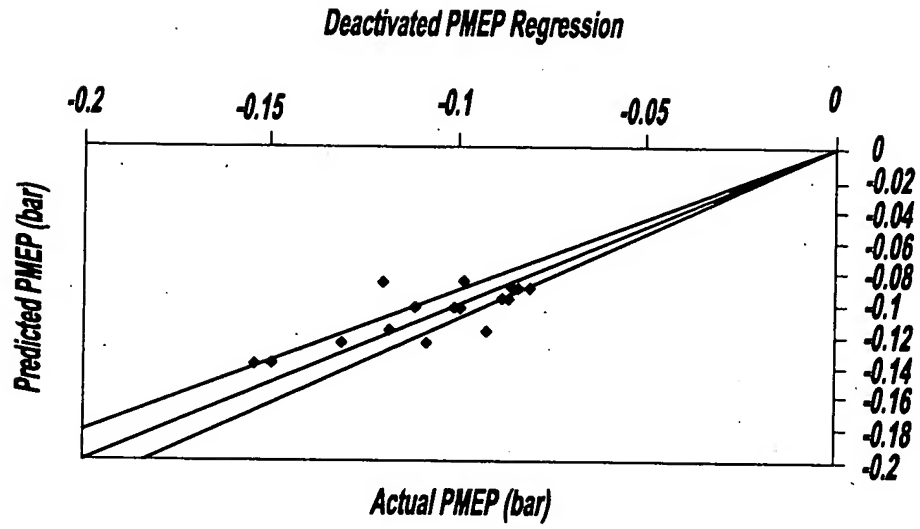


FIG - 5

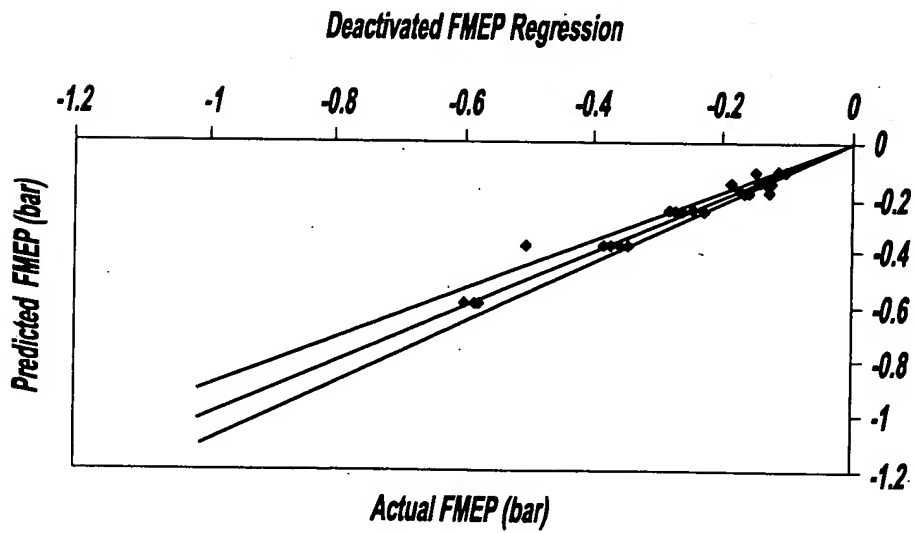
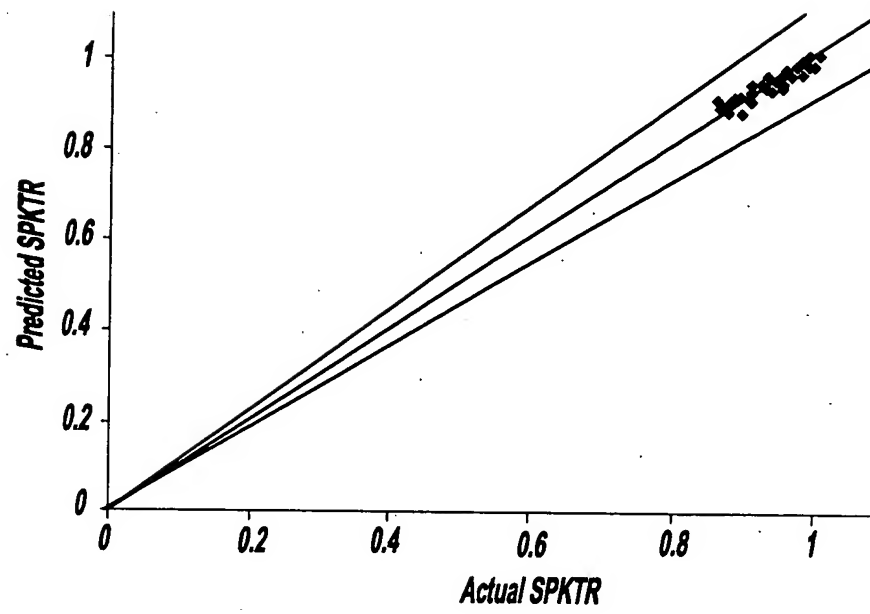
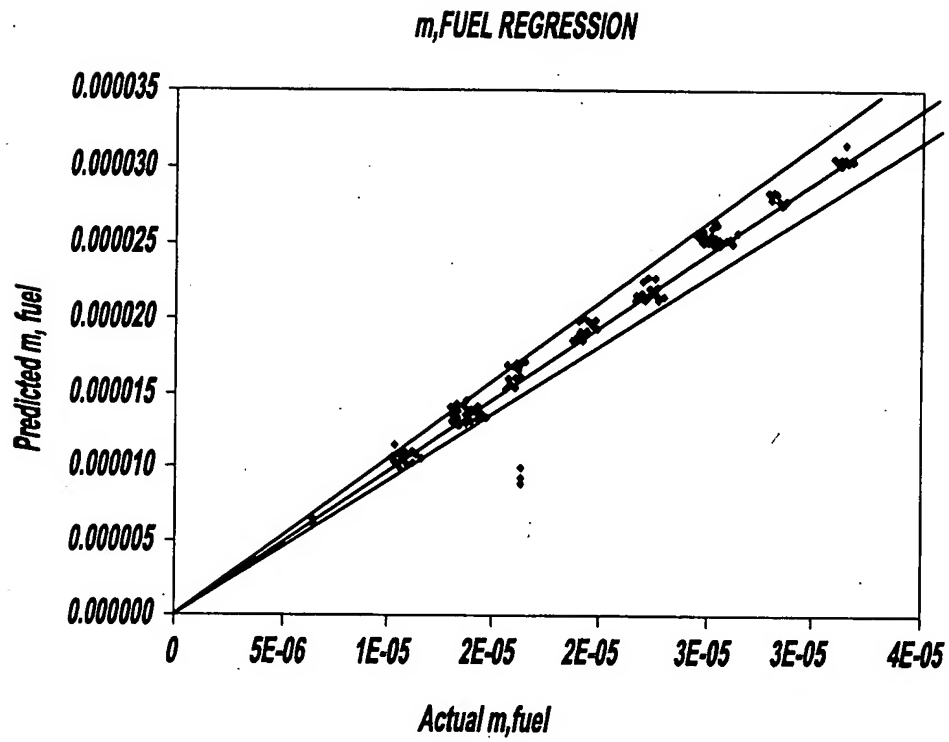


FIG - 6

Spark Retard Torque Reduction Regression**FIG - 7**

**FIG - 8**

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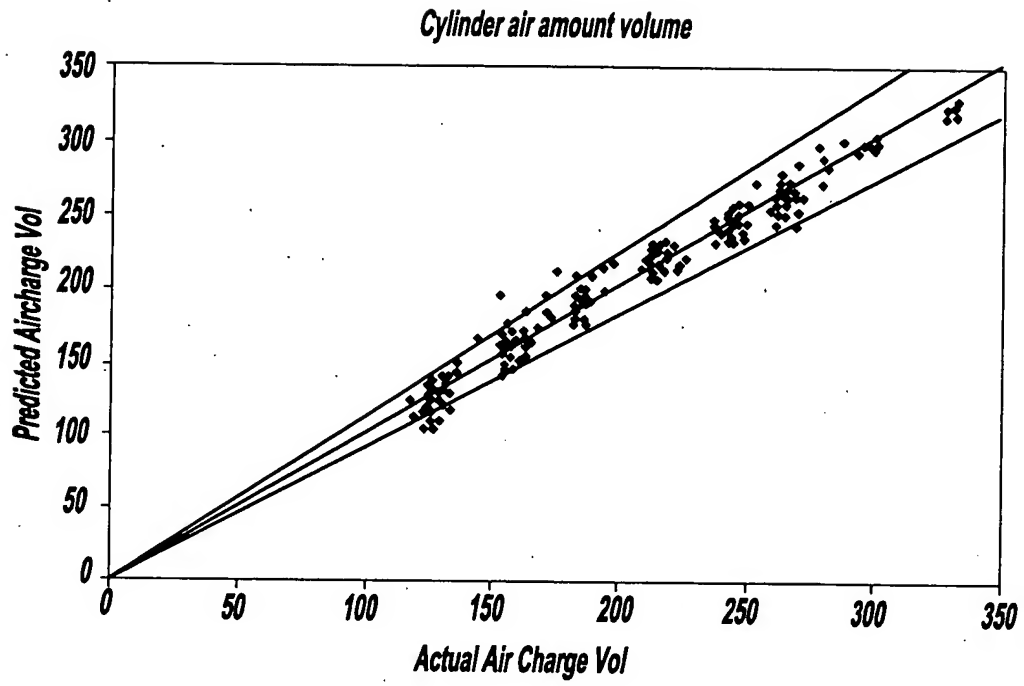
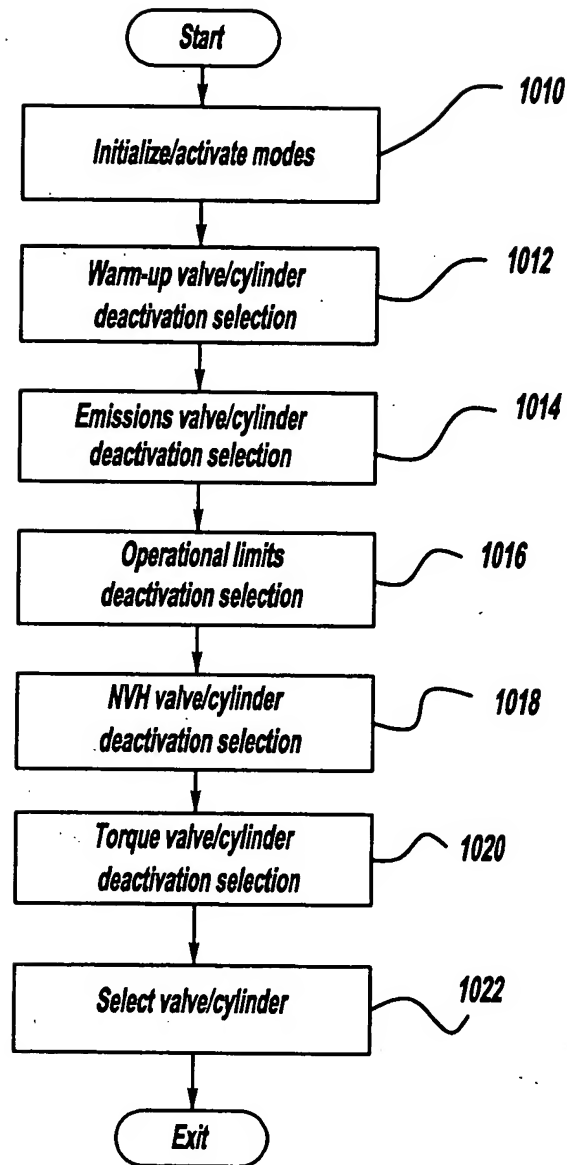


FIG - 9

**FIG - 10**

COLUMN 0 COLUMN 3

0 3

↓ DECREASING TORQUE ↑

V2	1	1	1	1	ROW 3
12-STROKE	1	1	1	1	
V4	1	1	1	1	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

→ DECREASING TORQUE →

FIG - 11

COLUMN 0 COLUMN 3

0 3

↓ DECREASING TORQUE ↑

V2	0	0	0	0	ROW 3
12-STROKE	0	0	0	0	
V4	1	1	0	0	
V8	1	1	1	1	ROW 0
	DIDE	DIAE	AIDE	AIAE	

→ DECREASING TORQUE →

FIG - 12

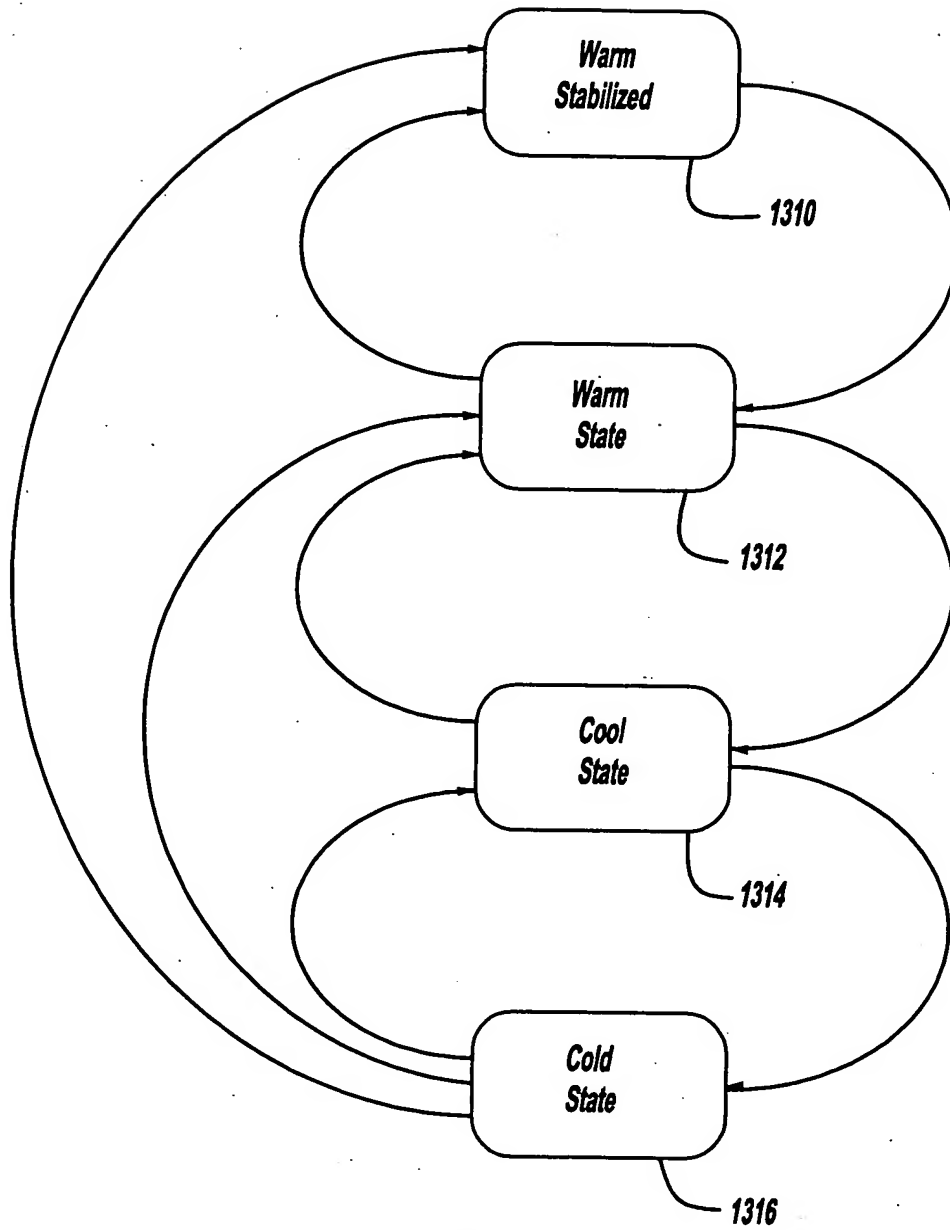


FIG - 13

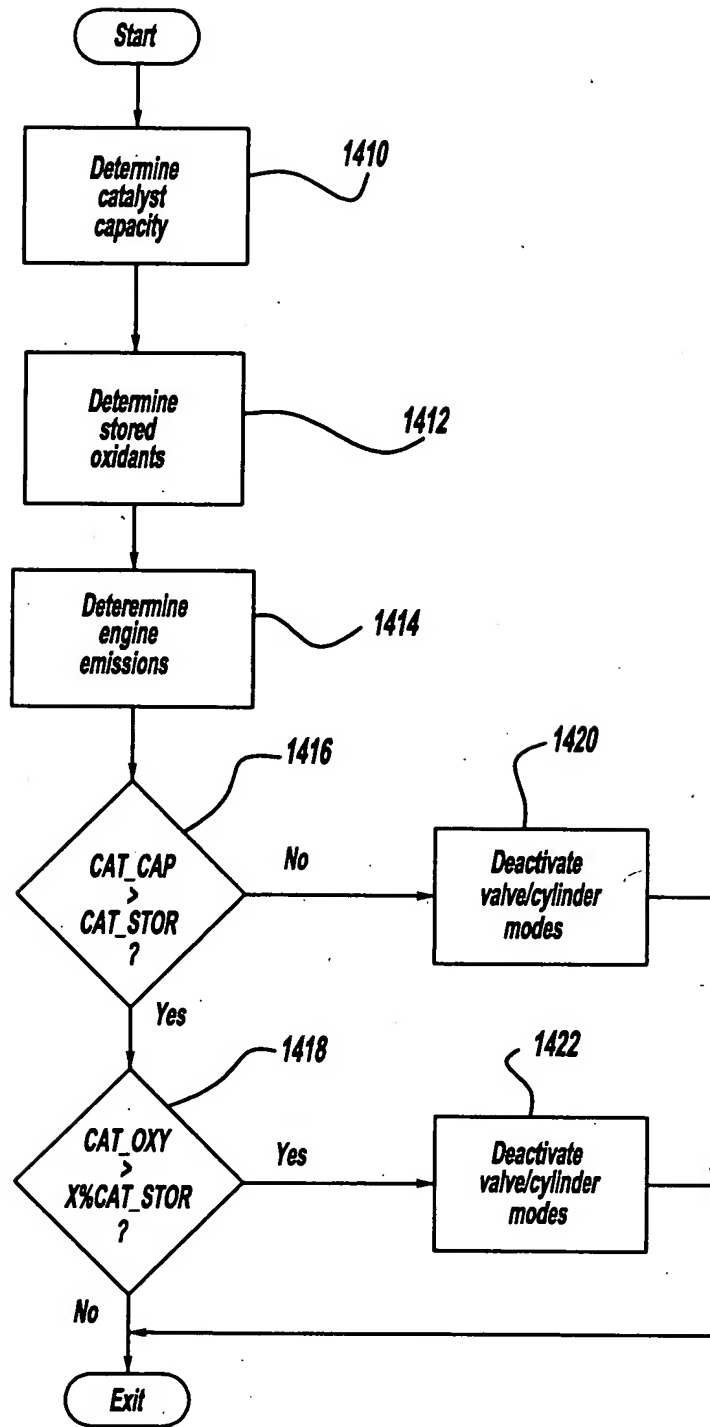
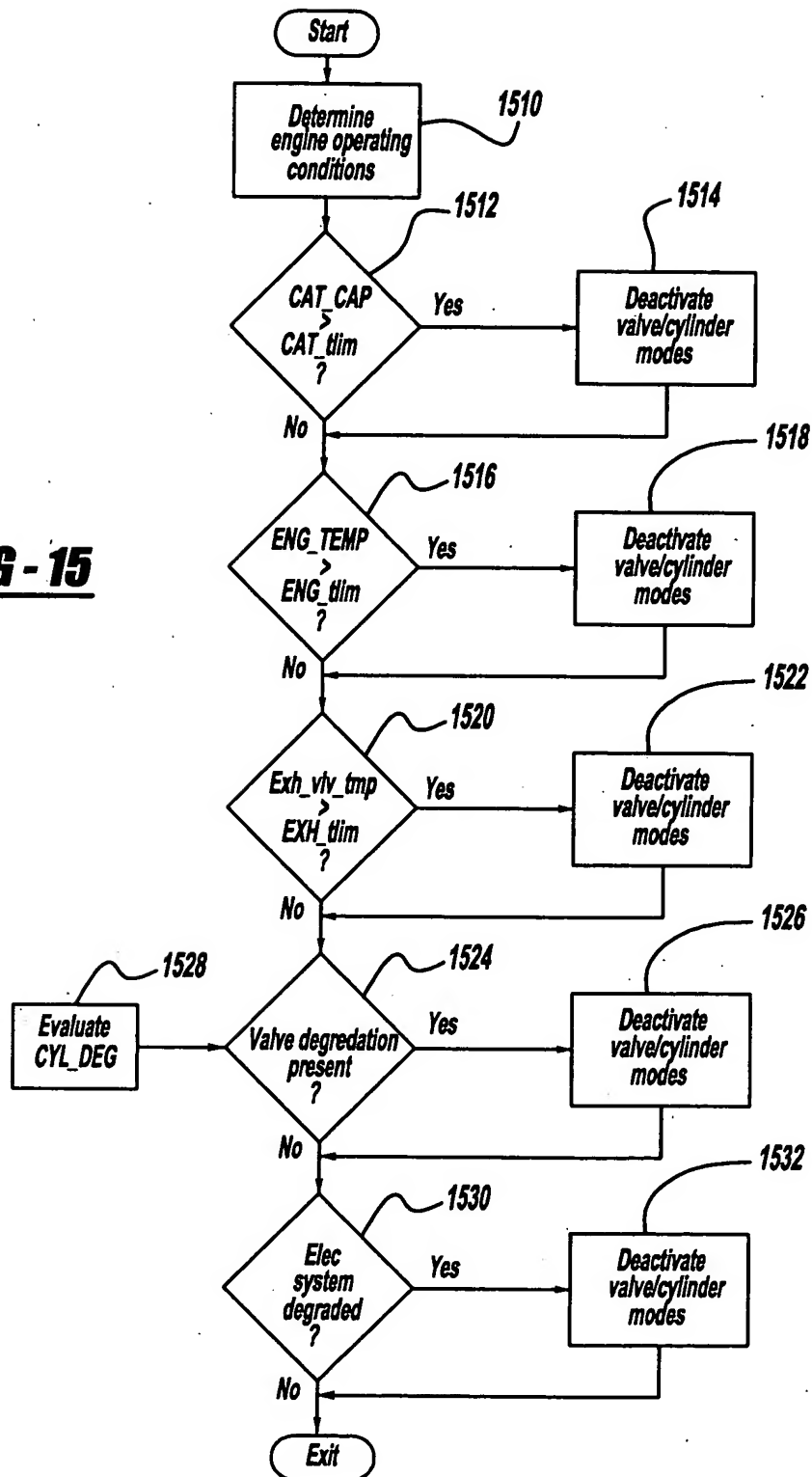
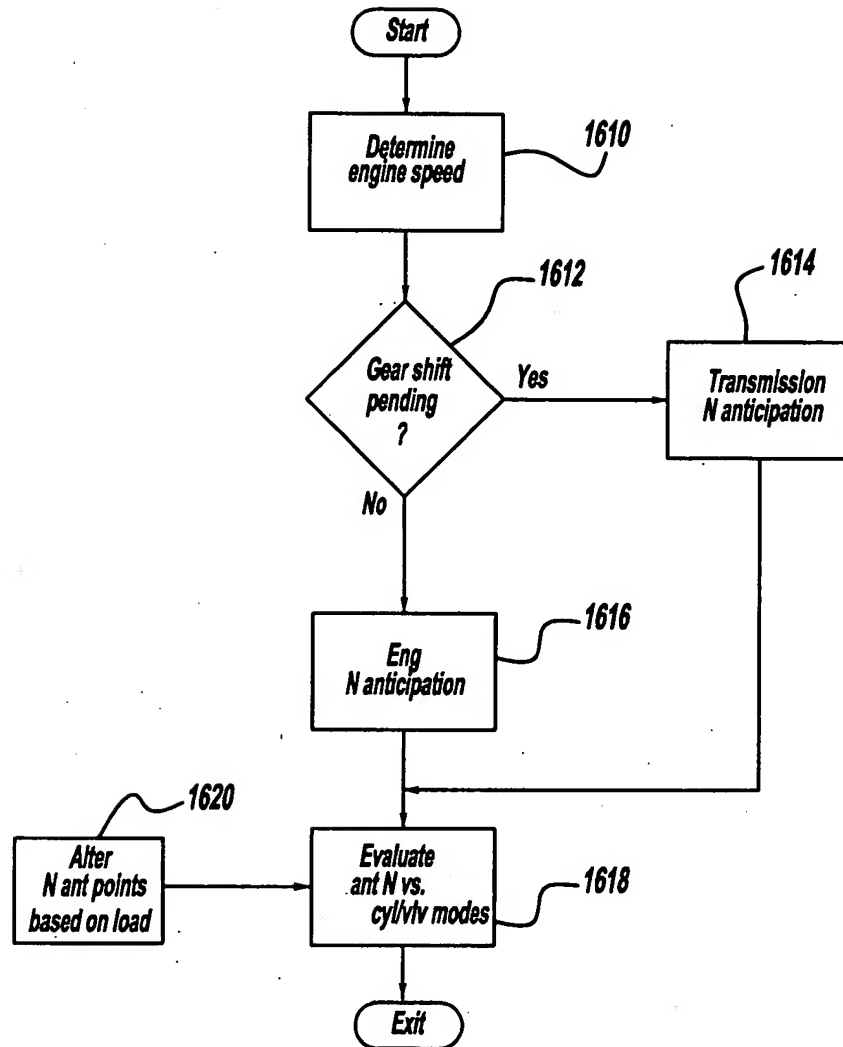
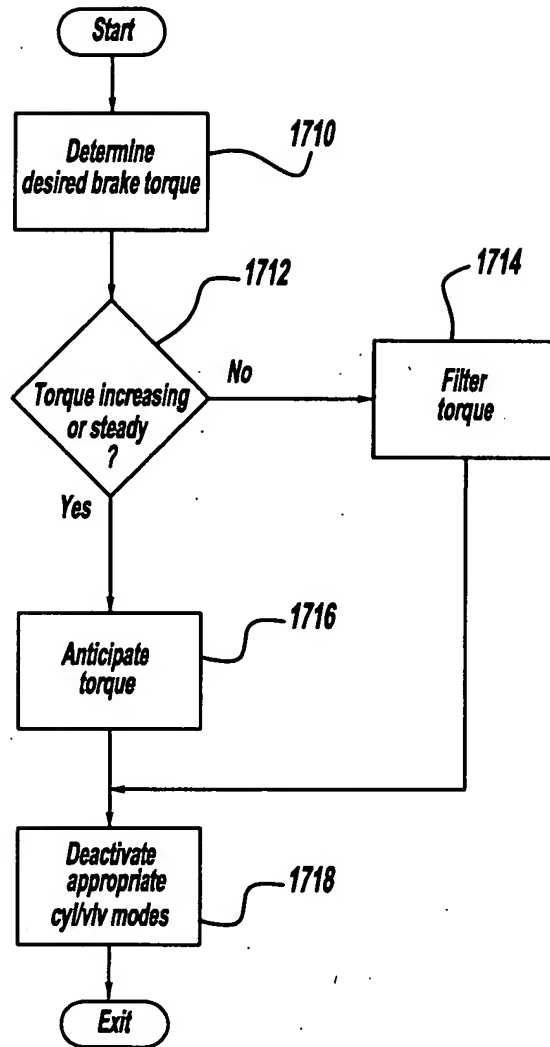
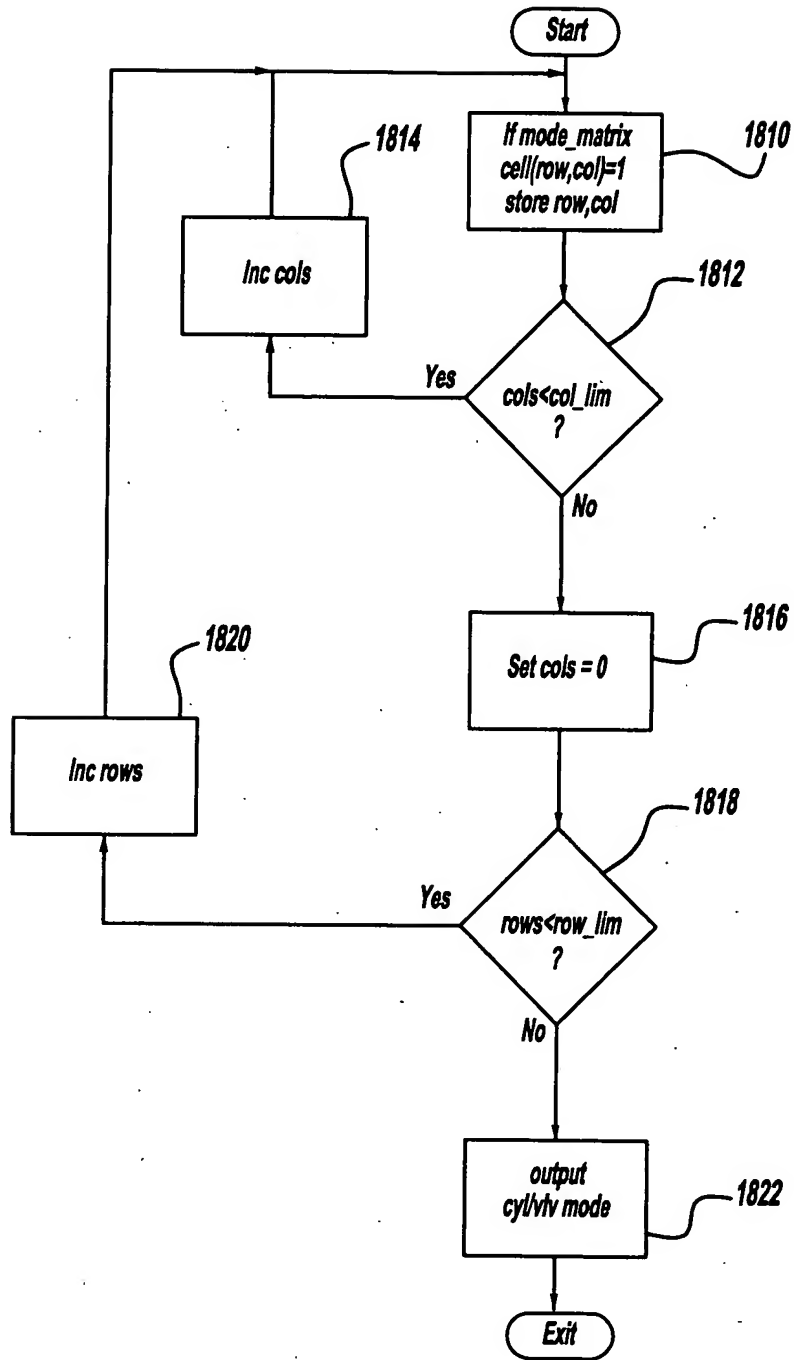
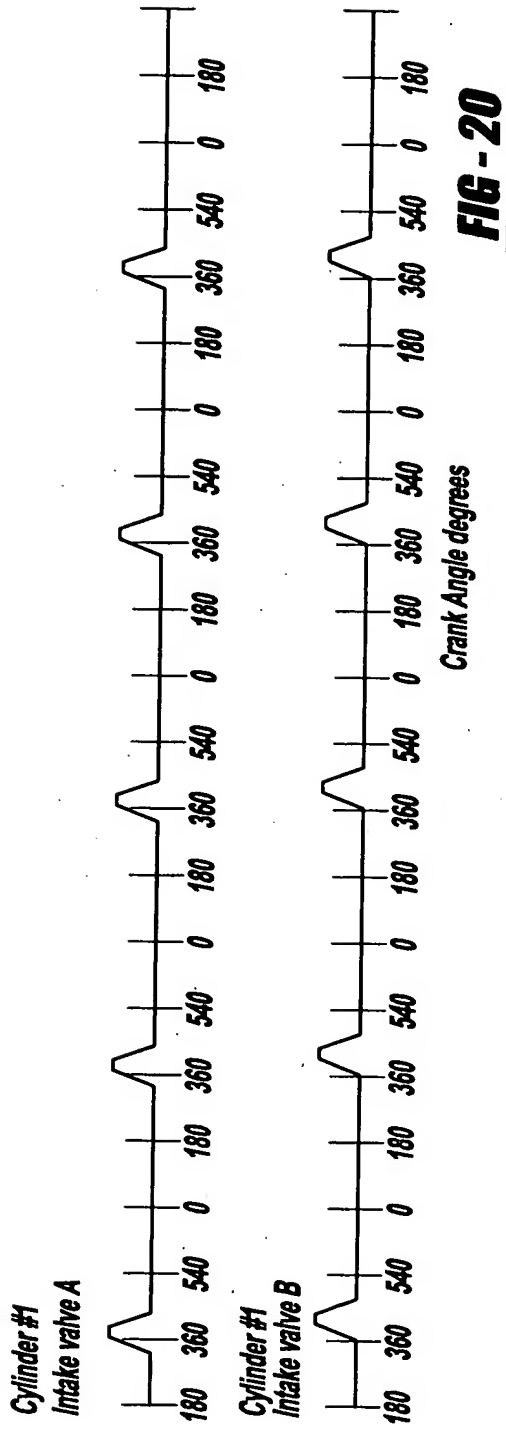
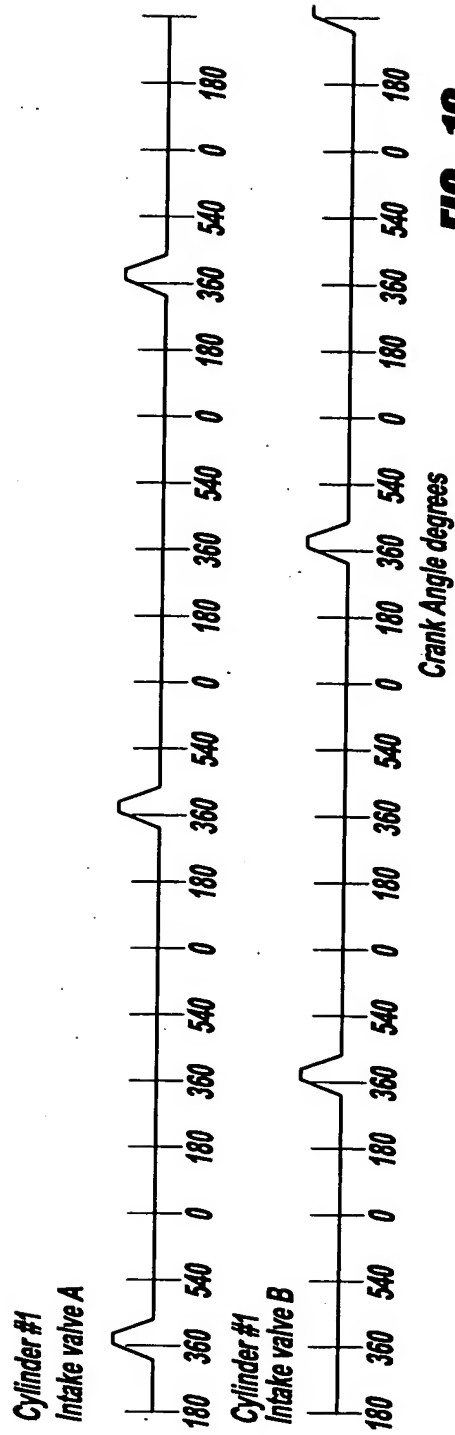
FIG - 14

FIG - 15

**FIG - 16**

**FIG - 17**

**FIG - 18**



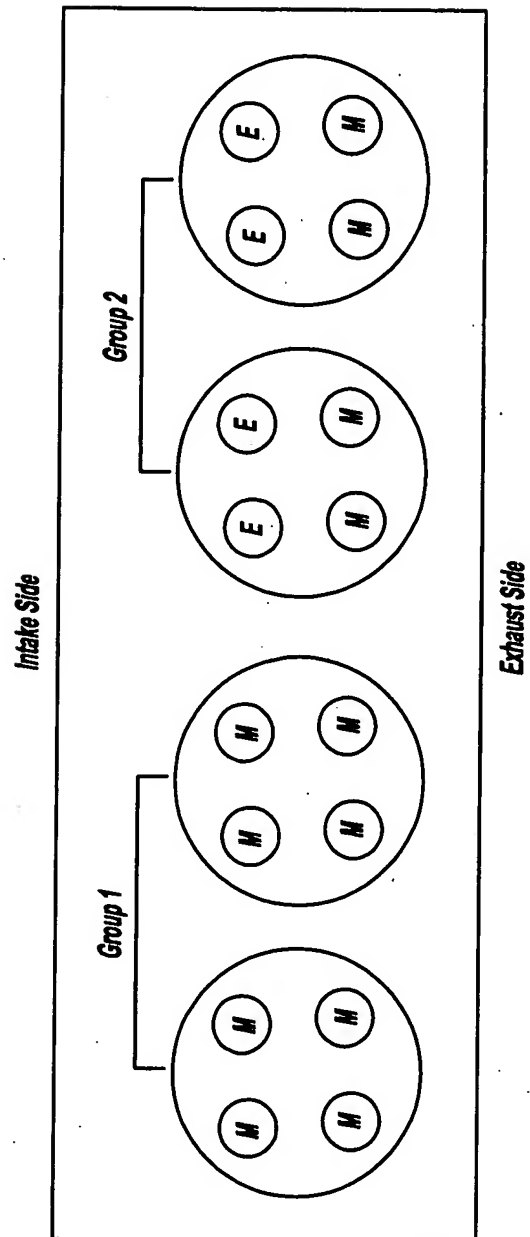


FIG - 21

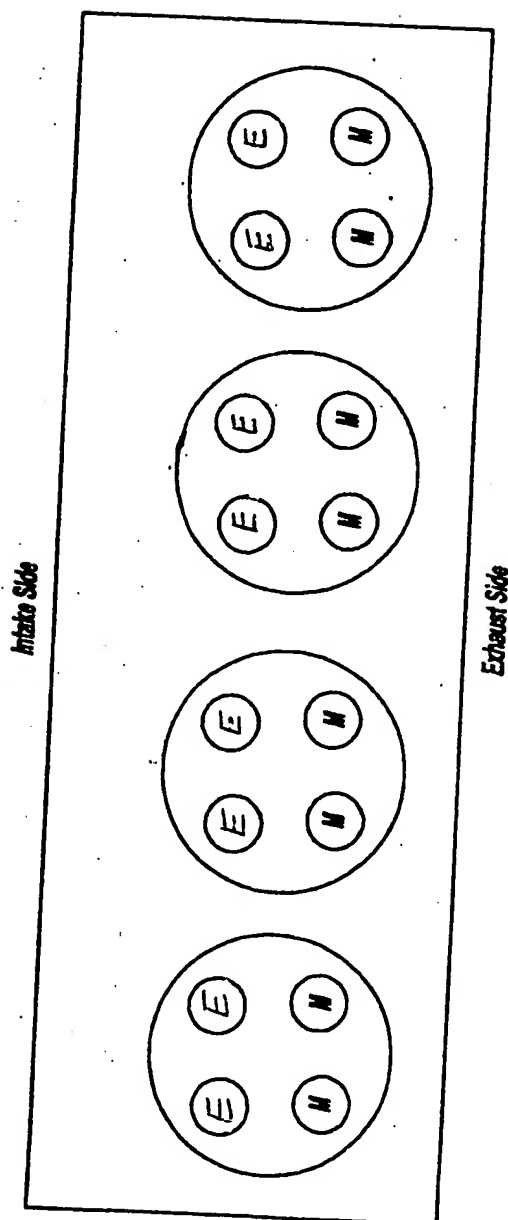


FIG - 21A

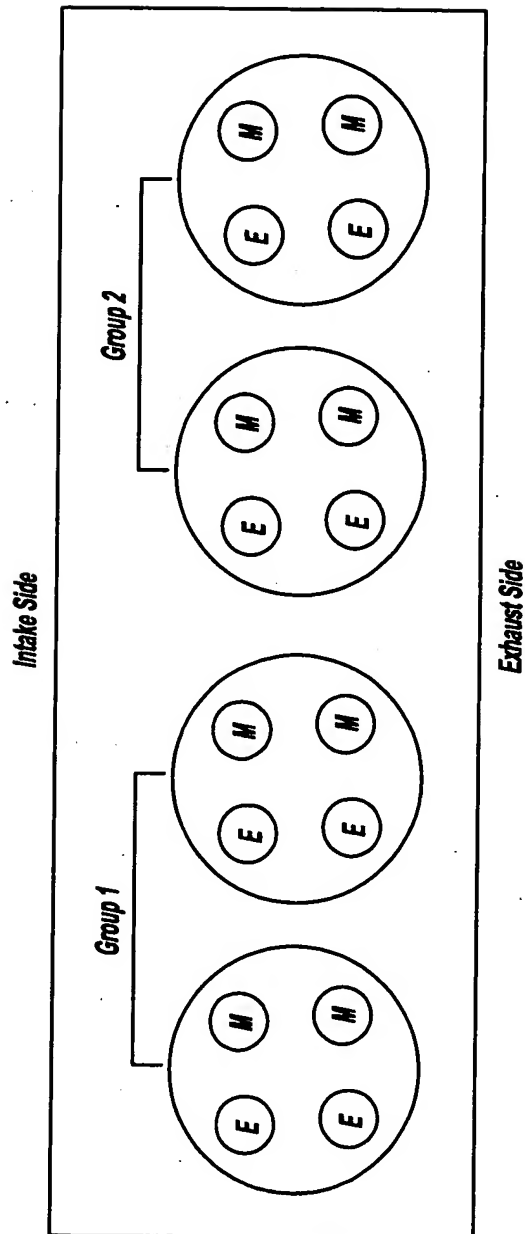


FIG - 22

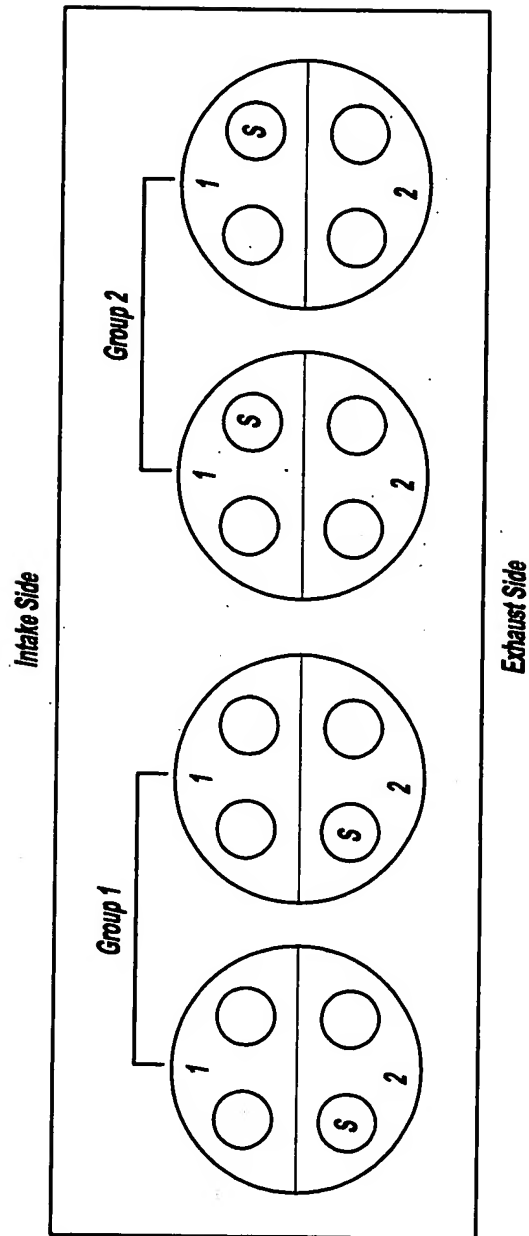


FIG - 23

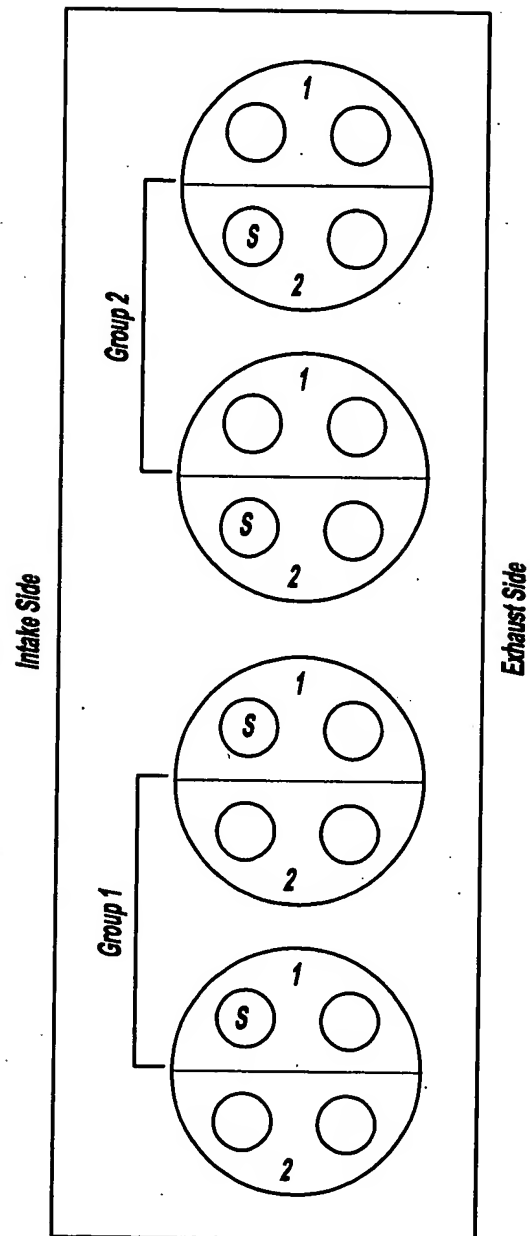


FIG - 24

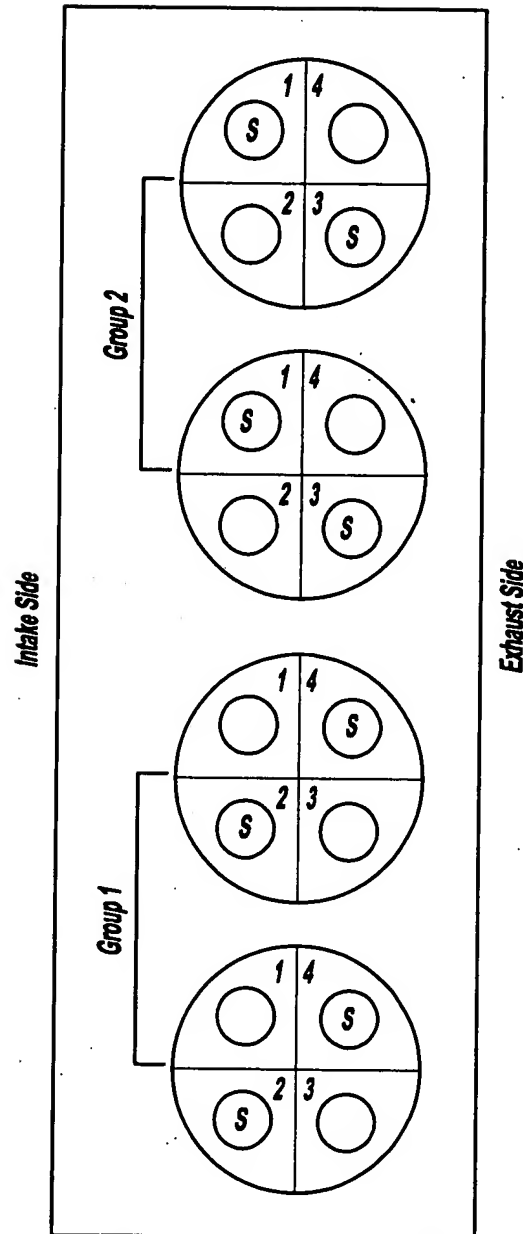


FIG - 25

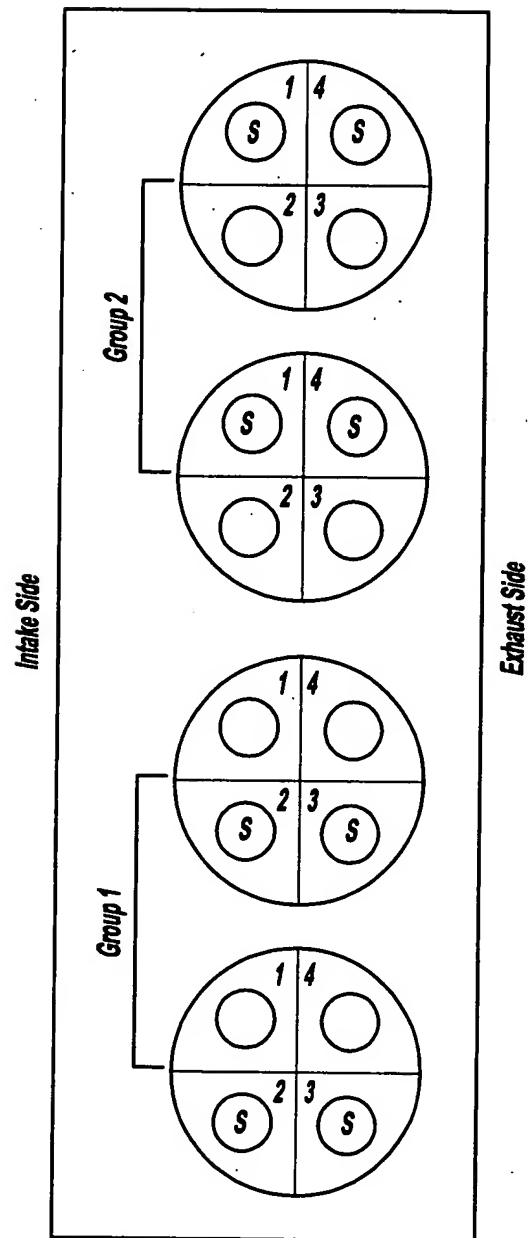


FIG - 26

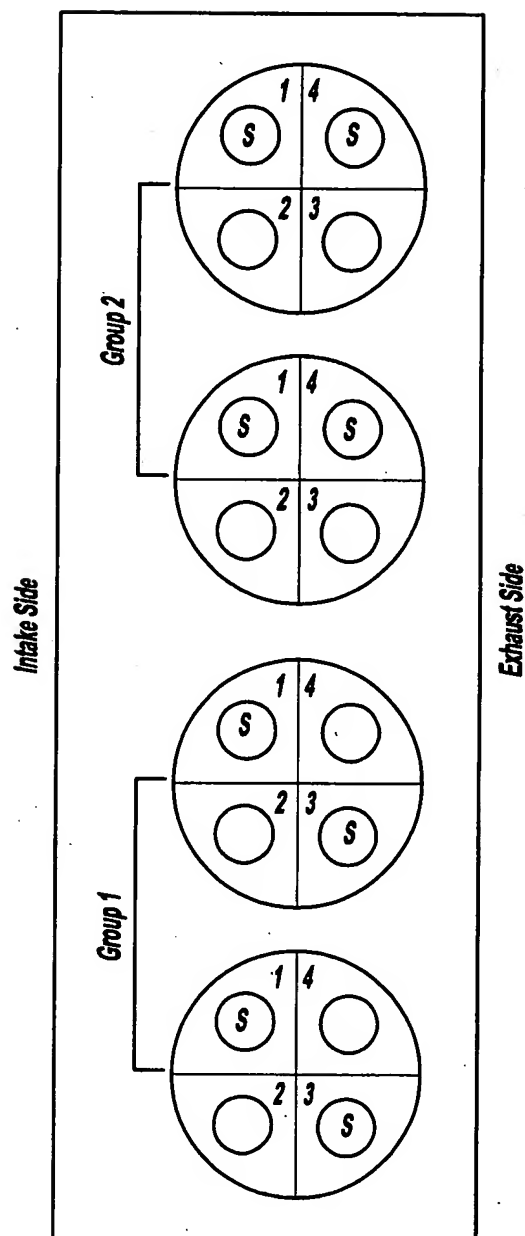
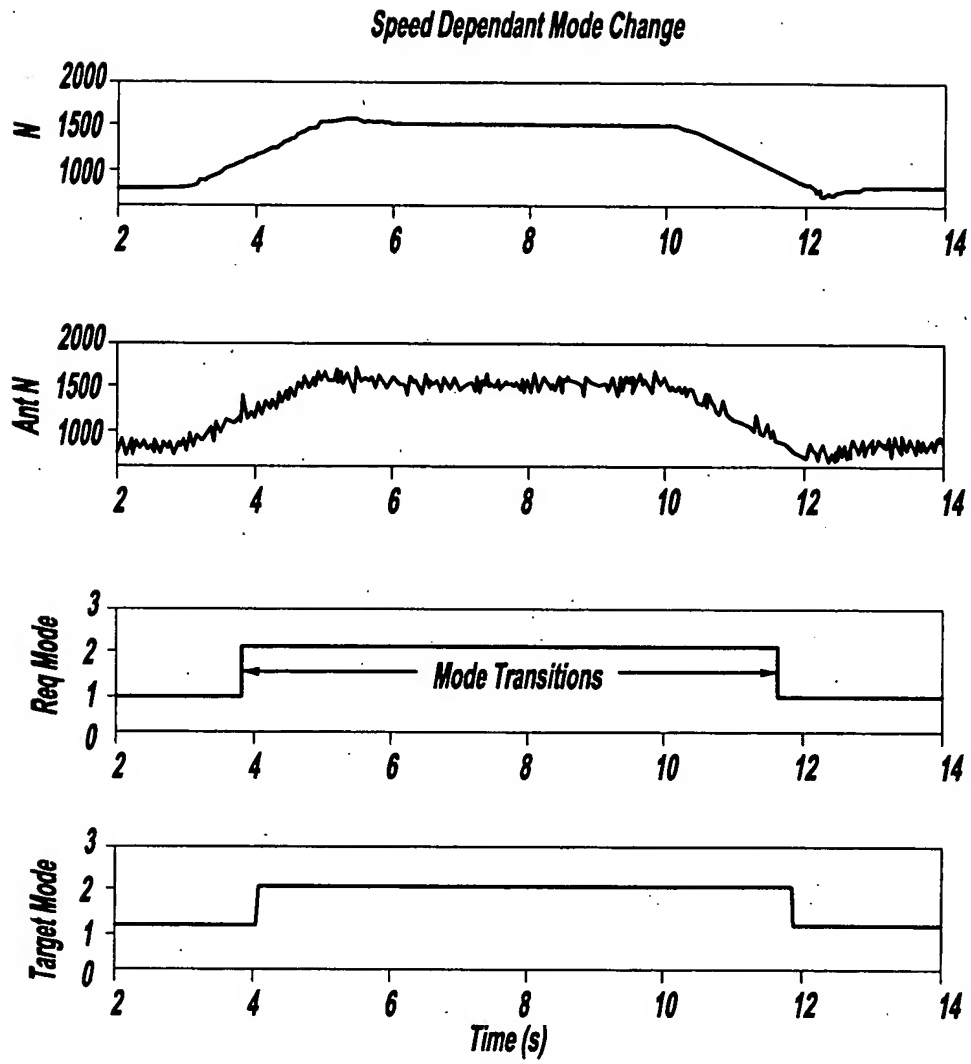


FIG - 27

**FIG - 28**

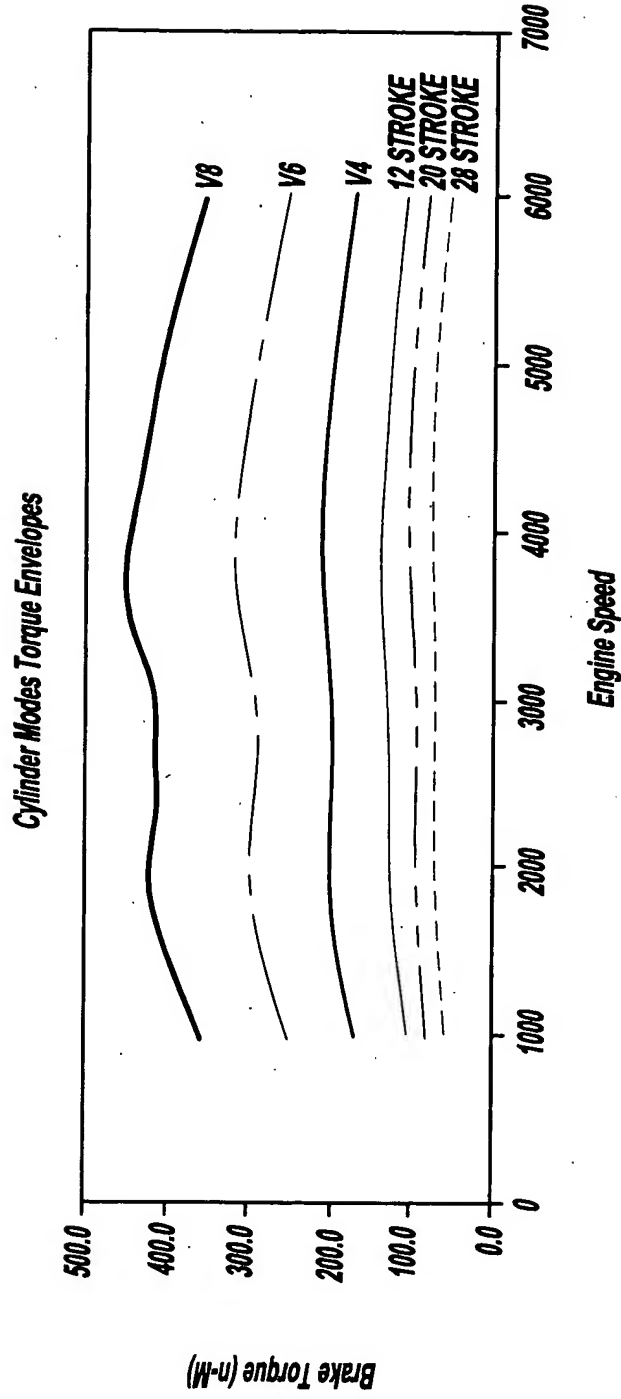


FIG - 29

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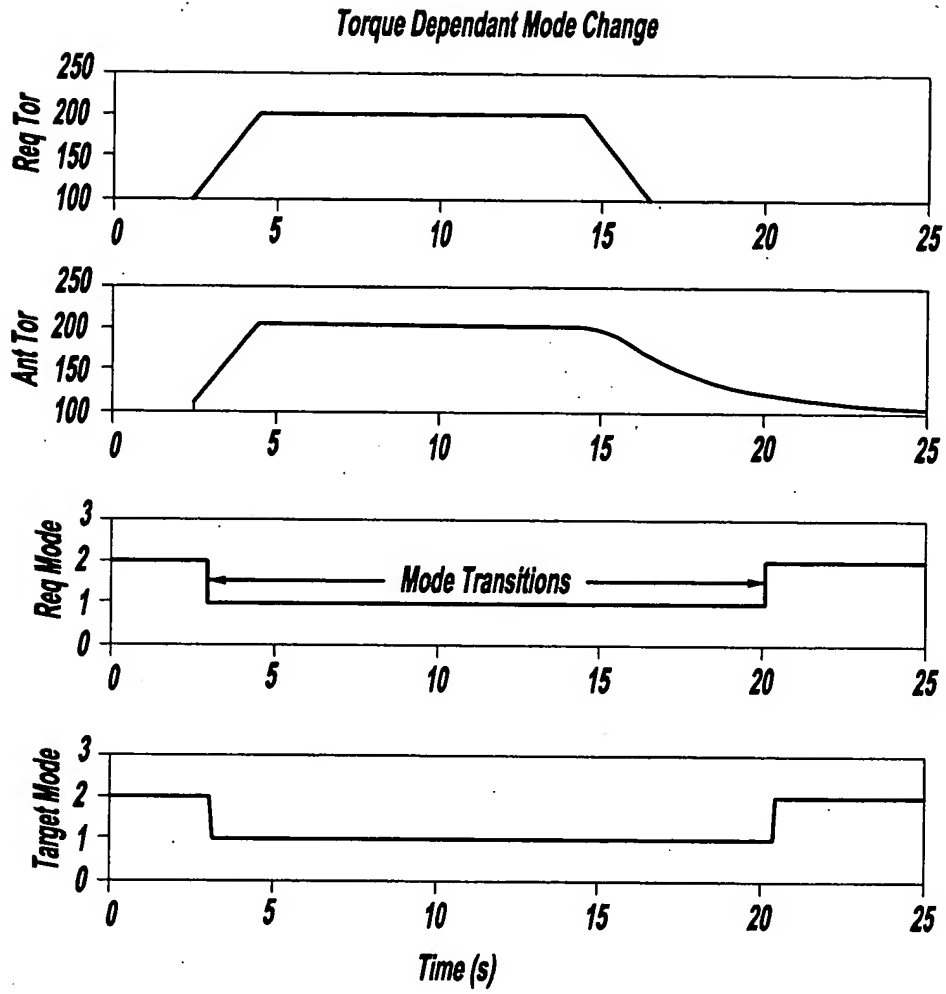
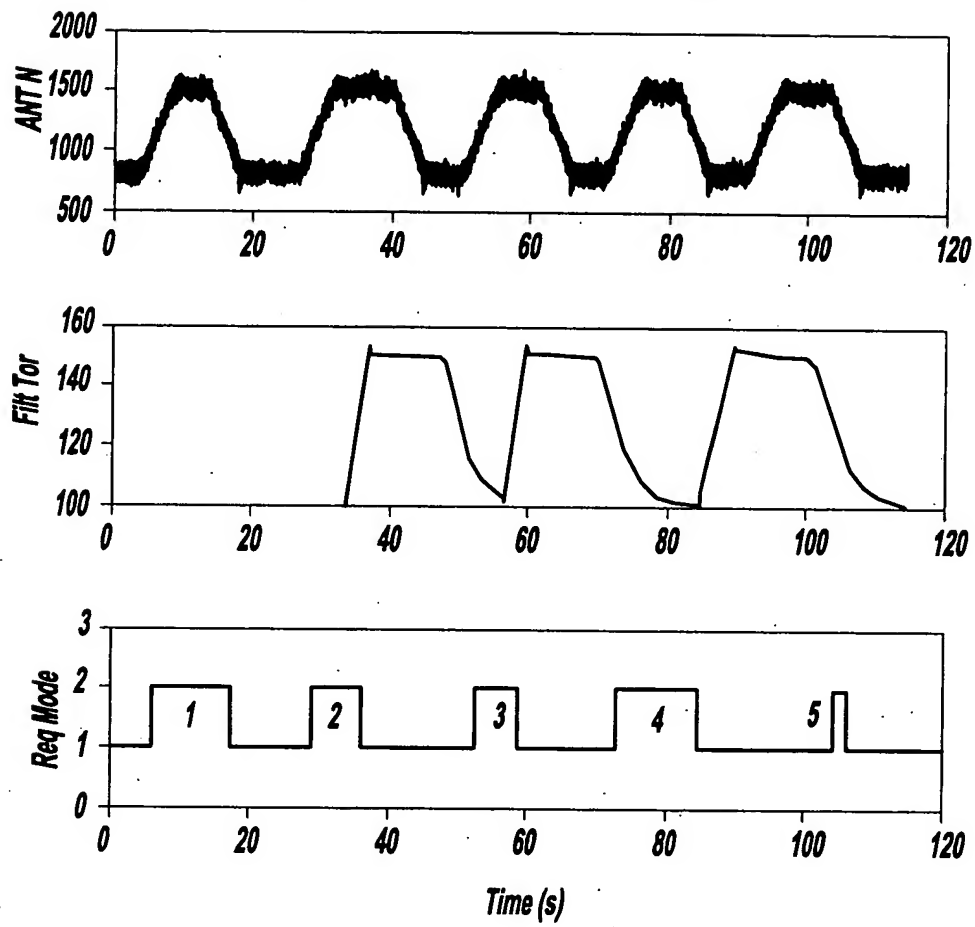
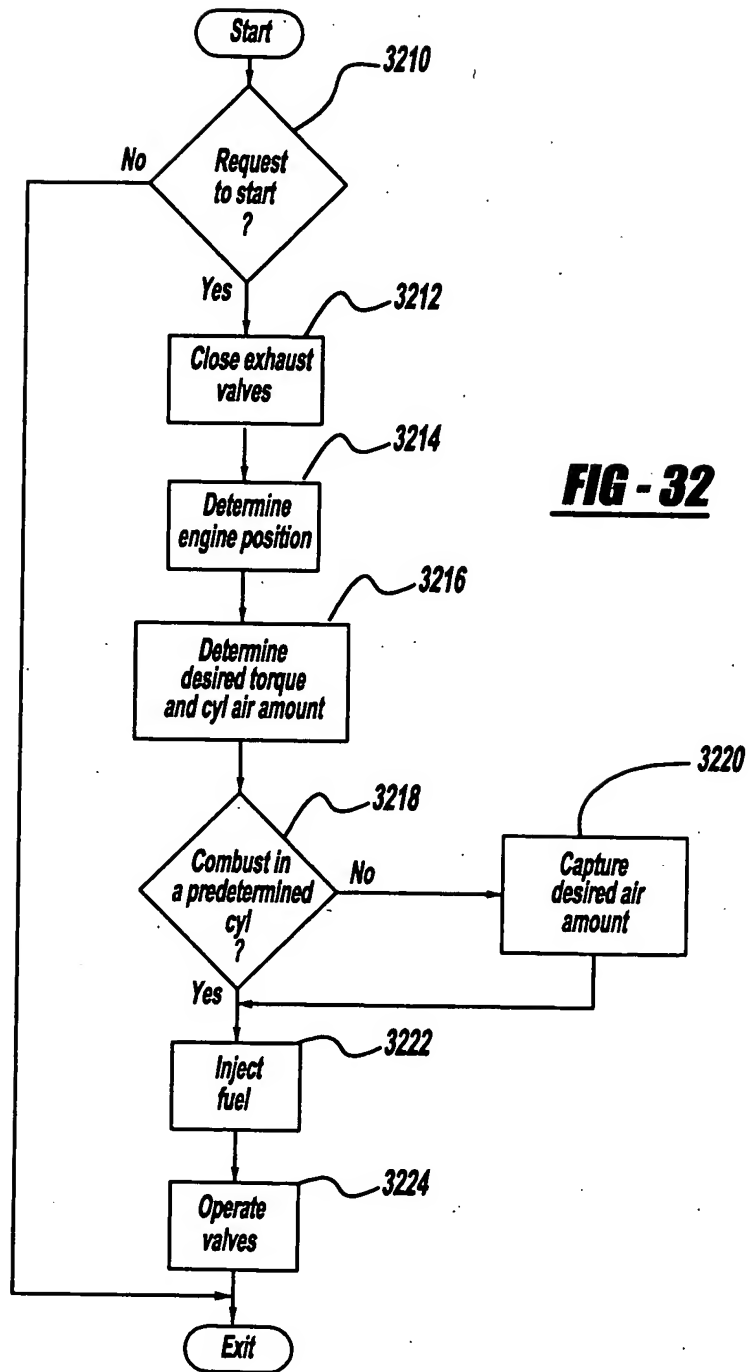


FIG - 30

Speed and Torque Dependant Mode Changes**FIG - 31**



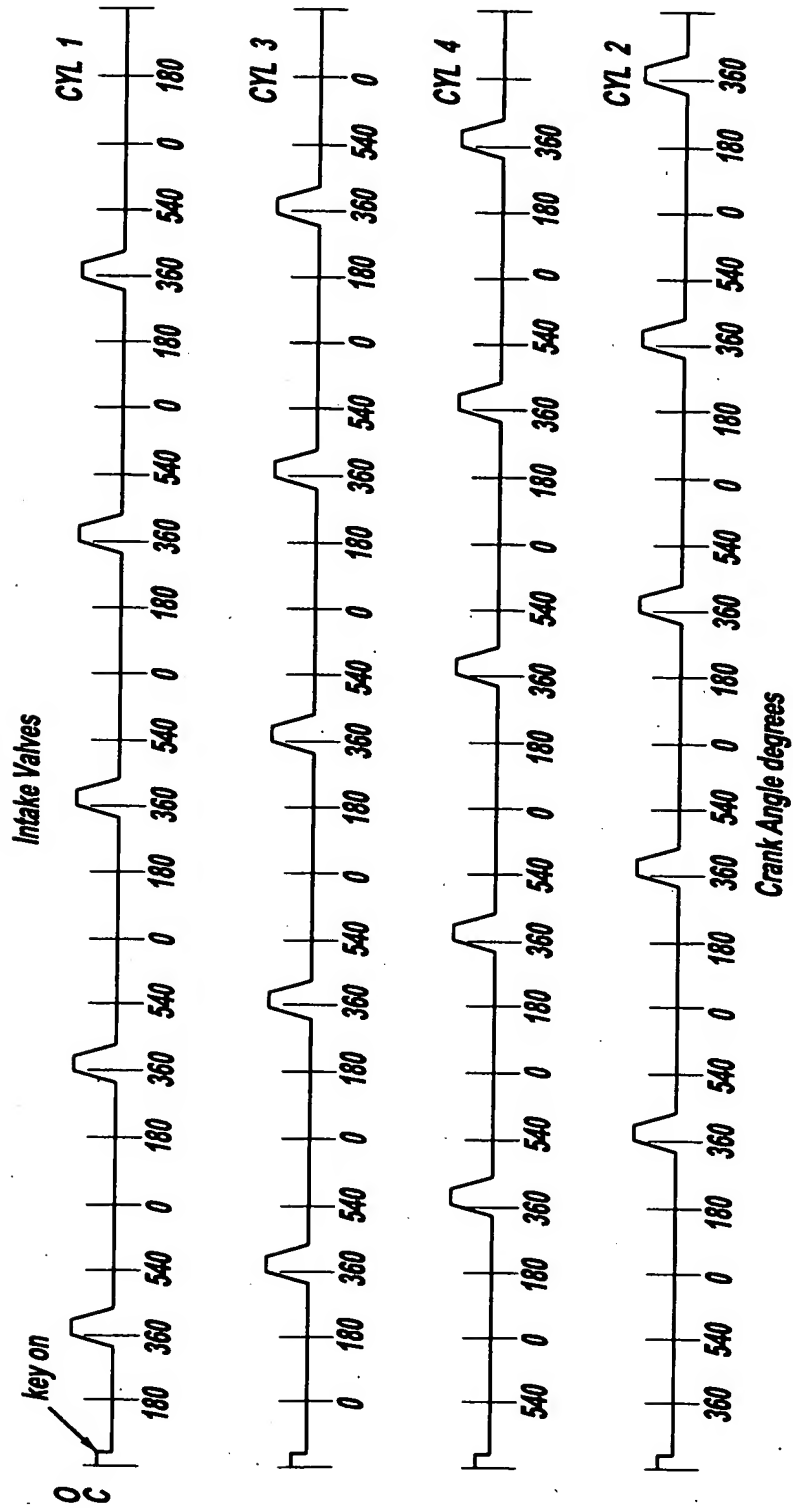


FIG - 33a

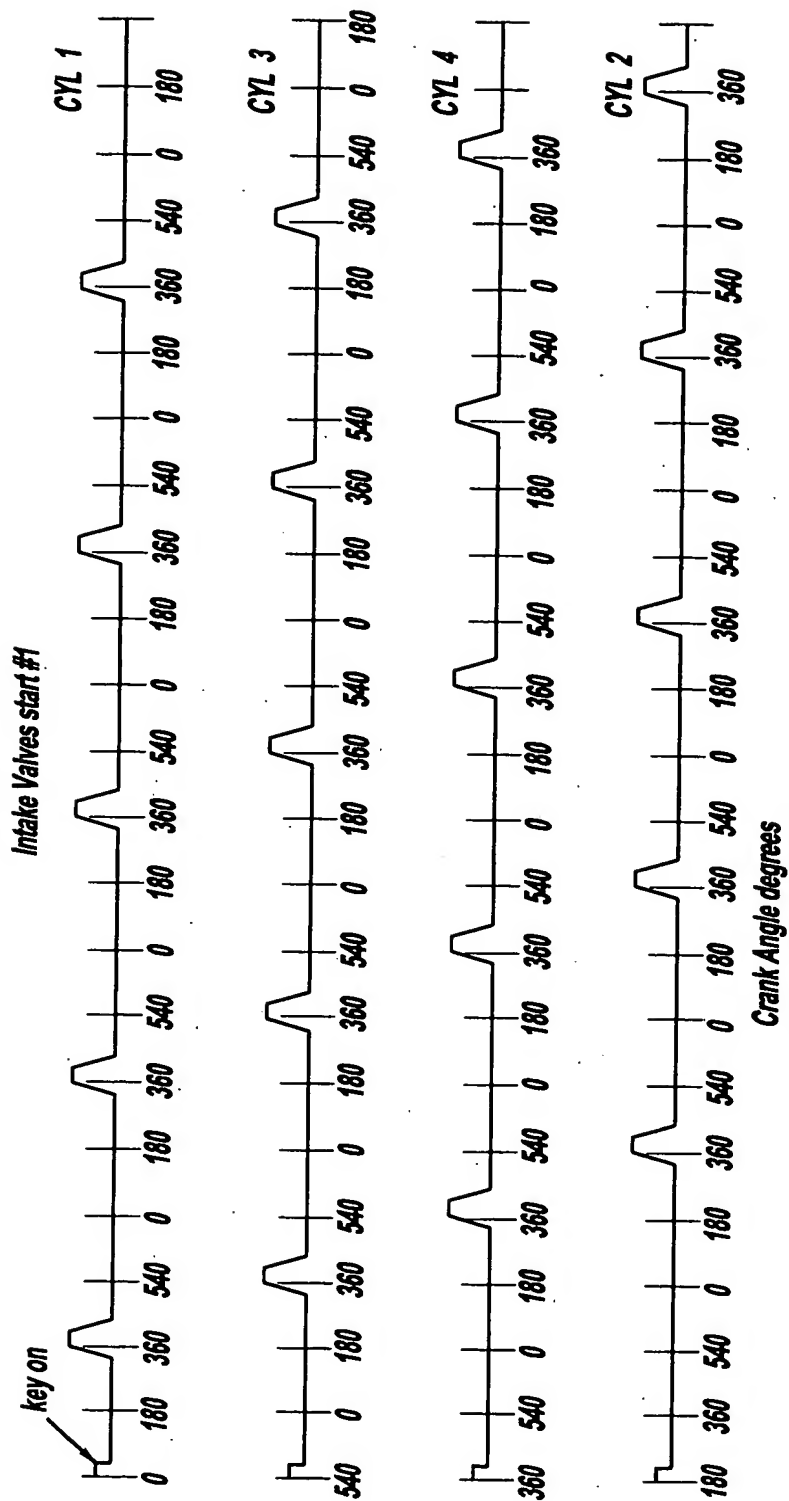


FIG - 34a

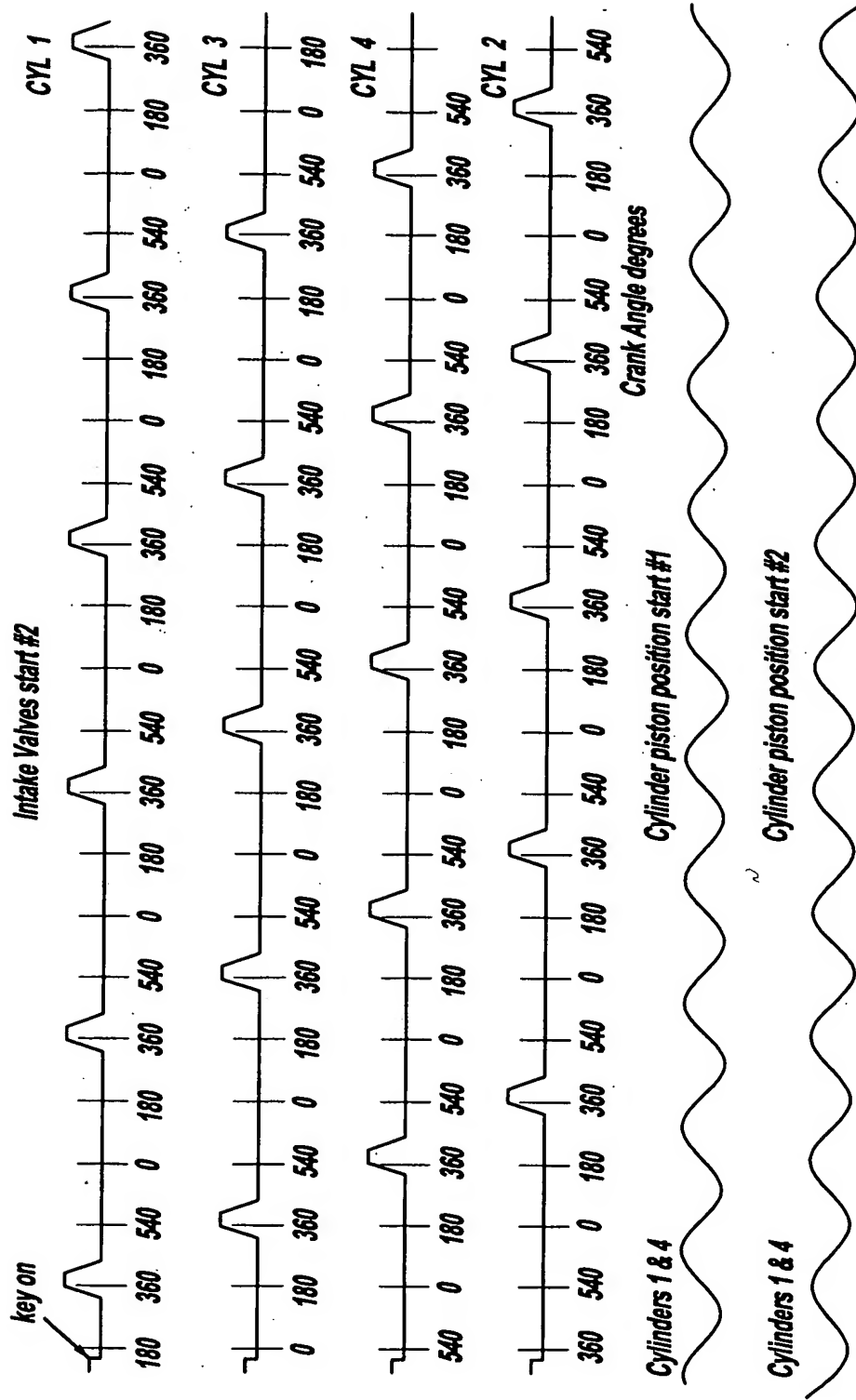
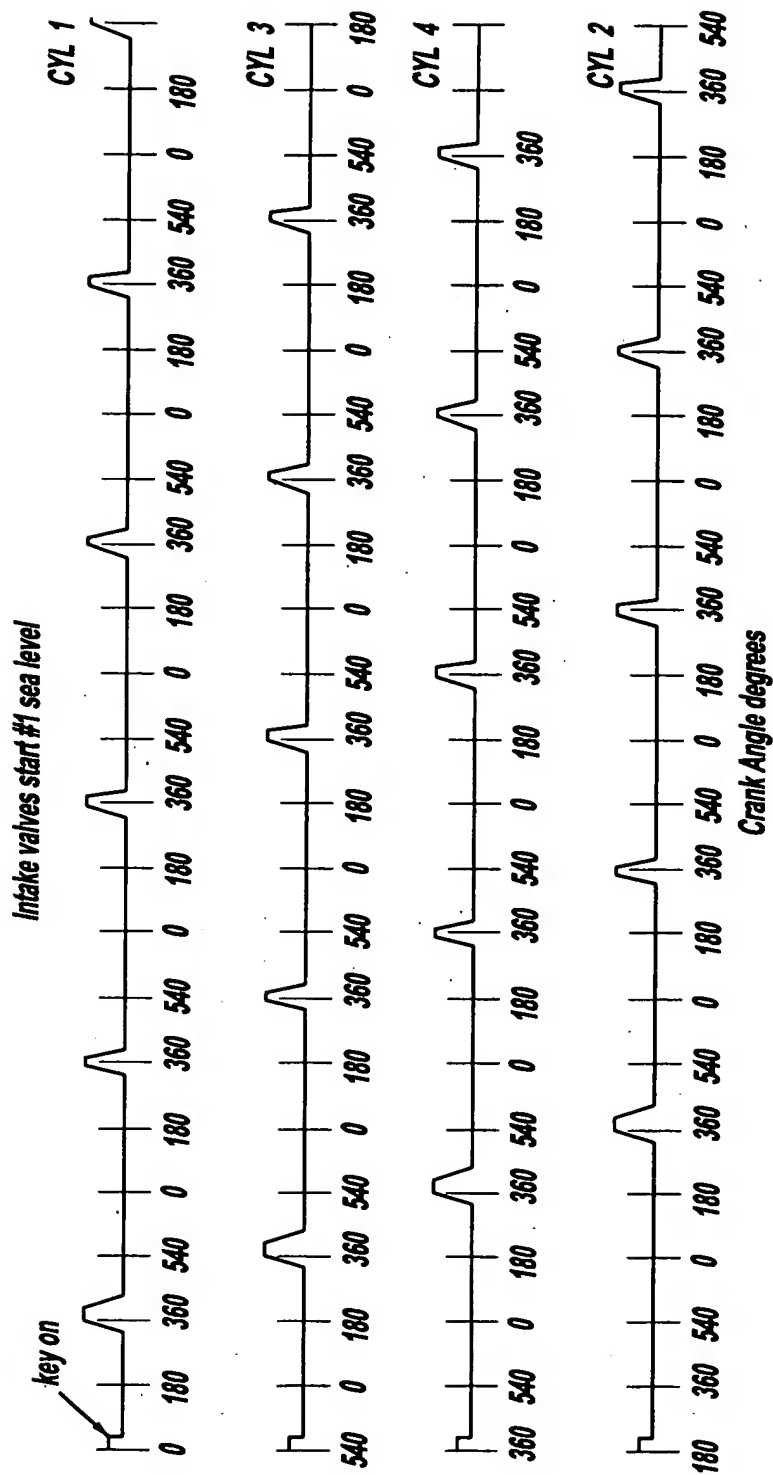
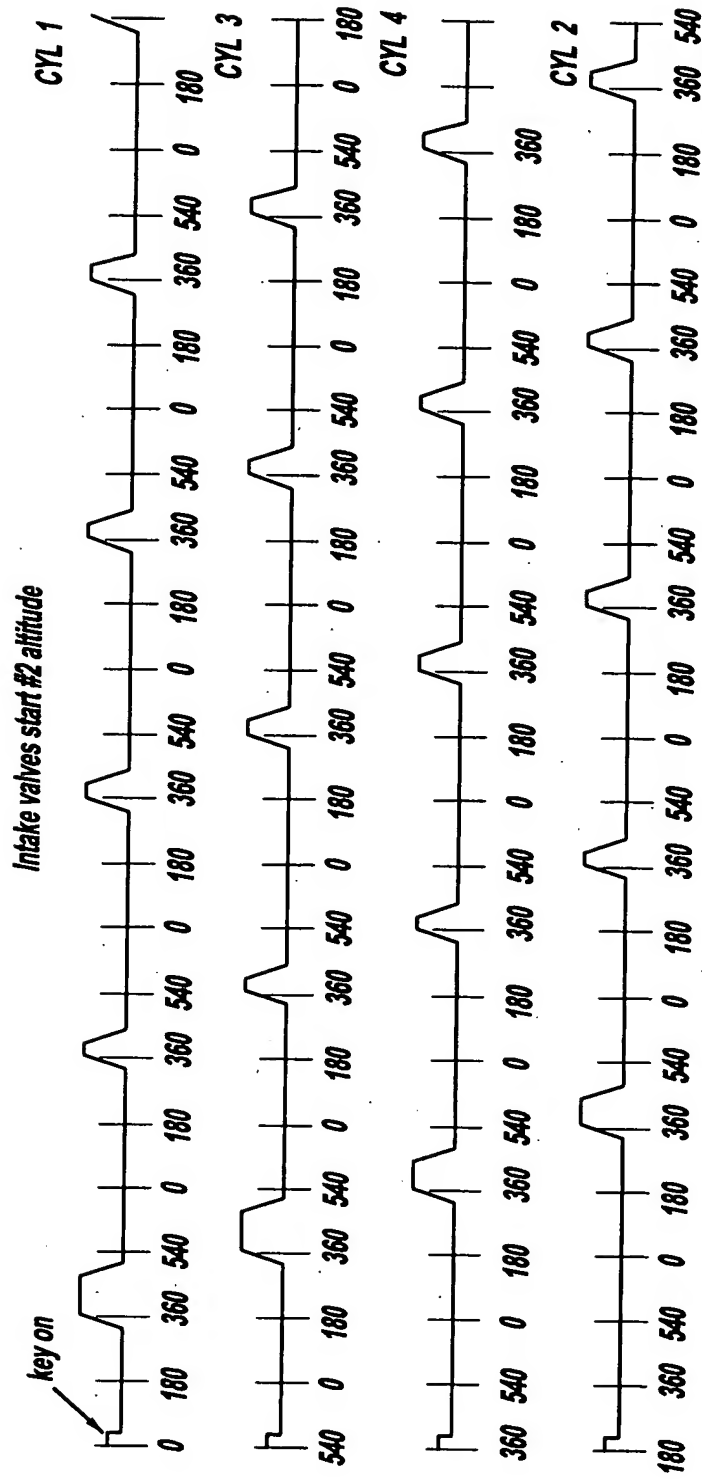
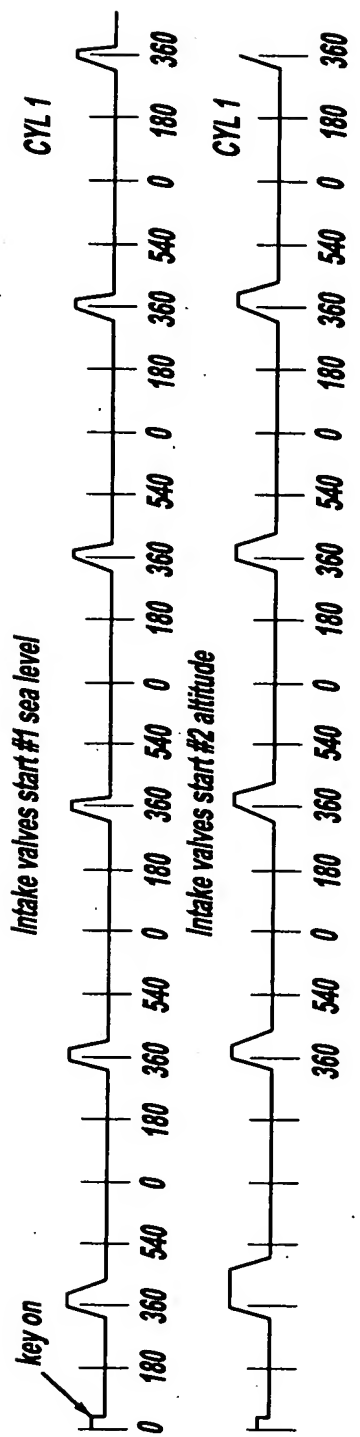


FIG - 34b

**FIG - 35a**

**FIG - 35b**



Crank angle degrees

Desired Engine torque

Engine Speed

FIG - 36

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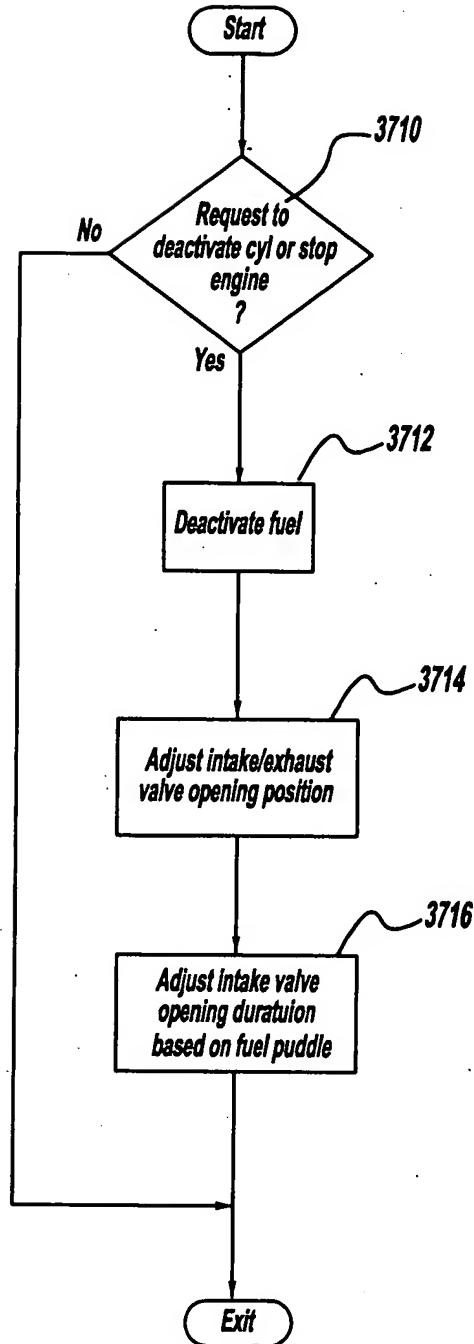
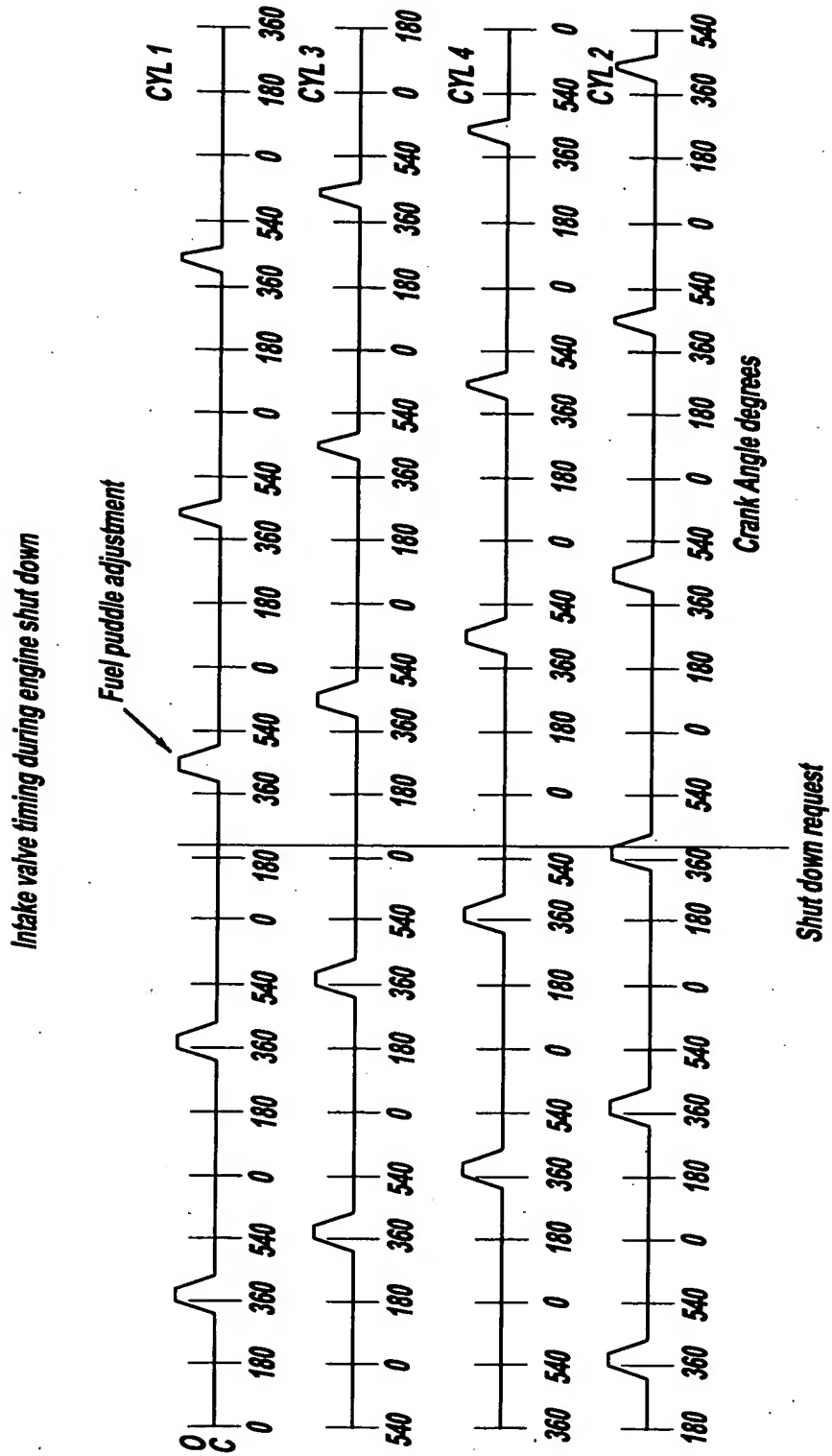
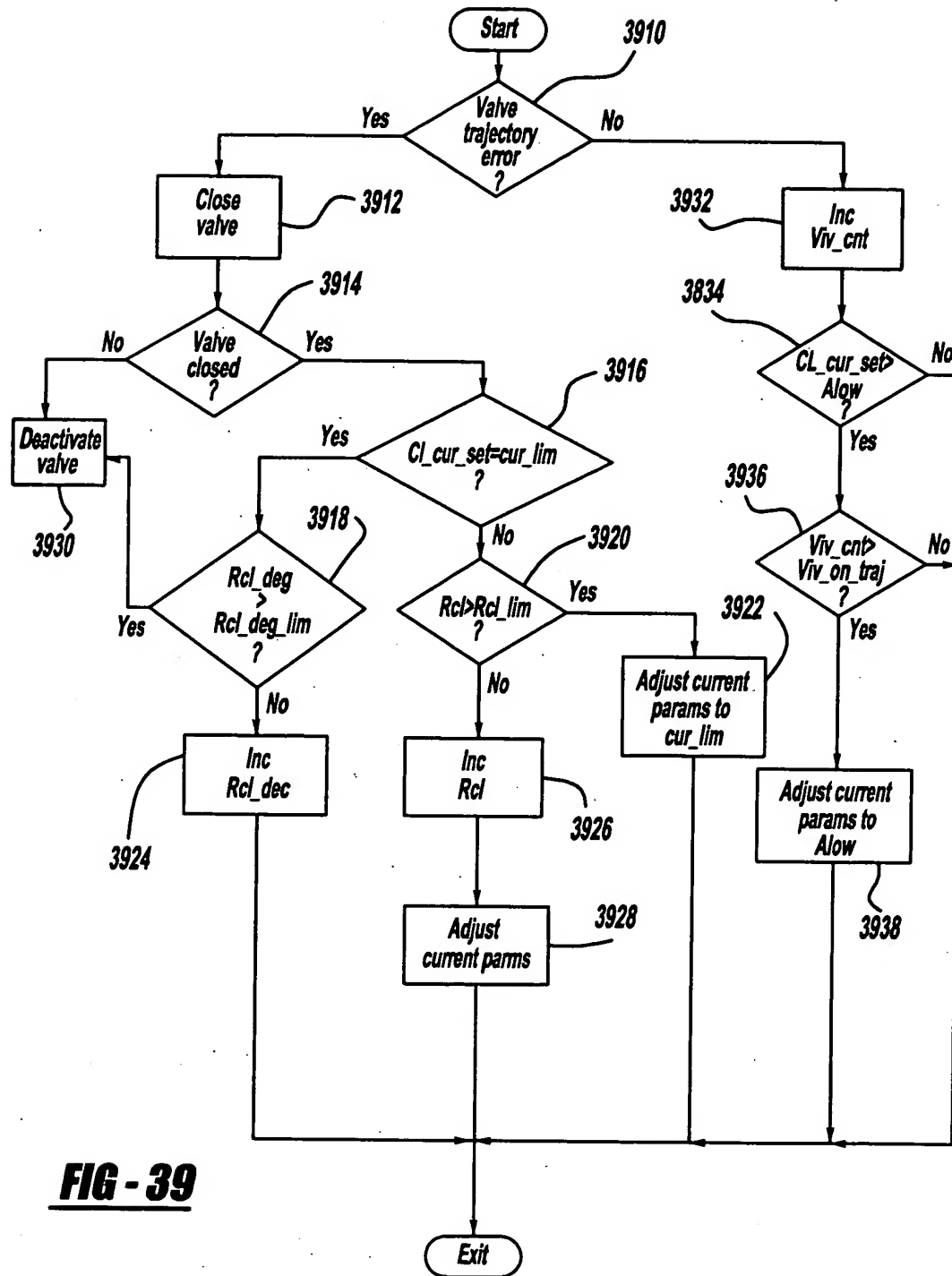


FIG - 37

**FIG - 38**

**FIG - 39**

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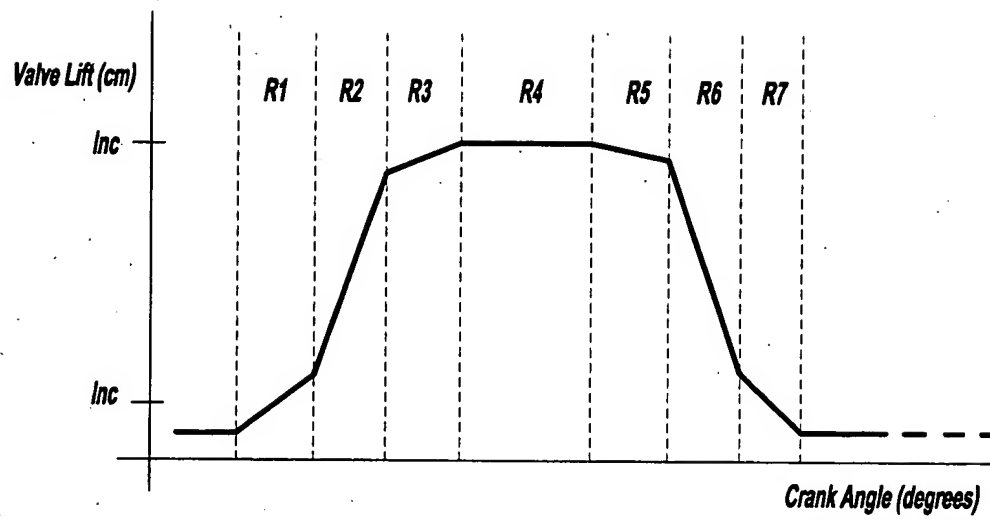
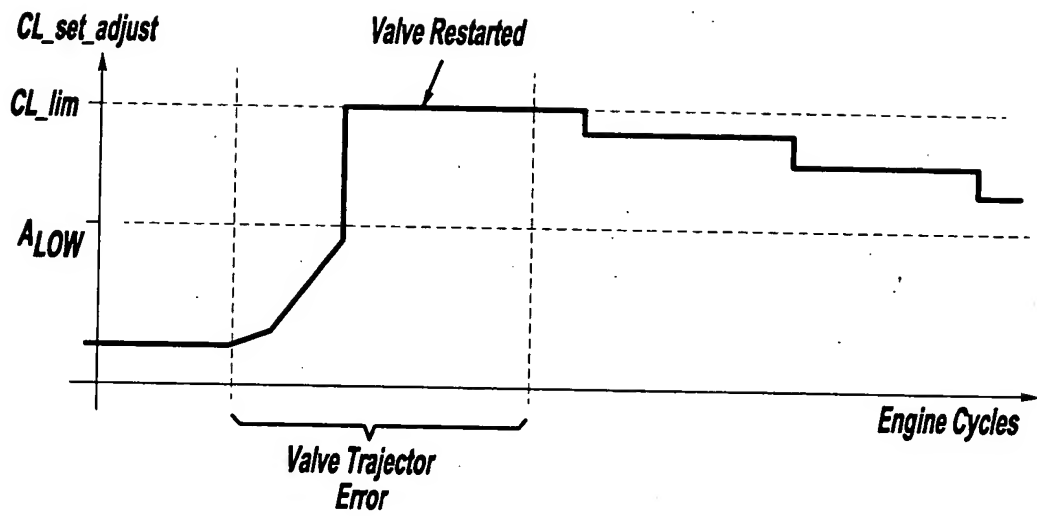
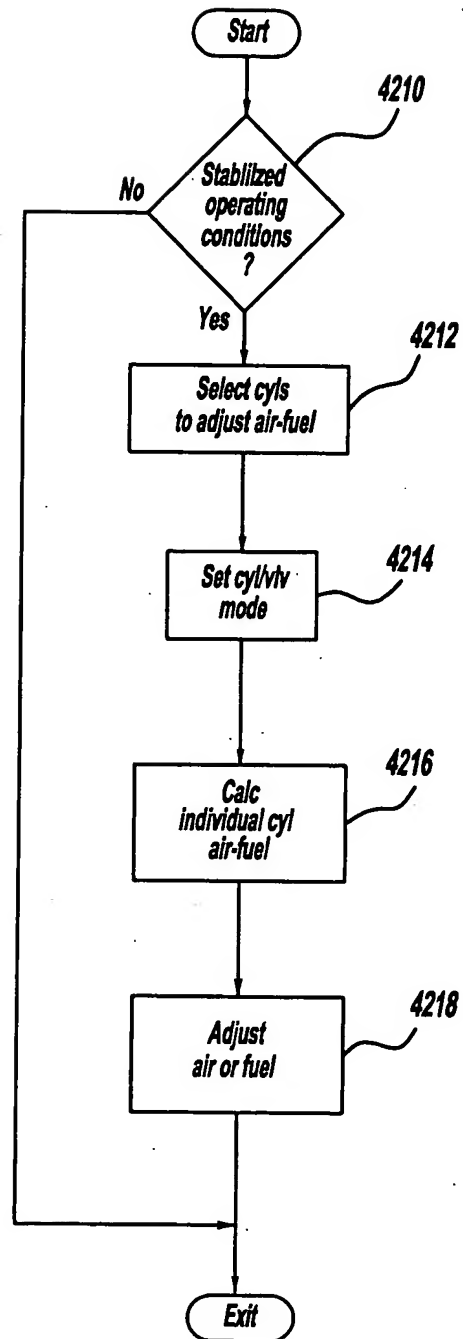


FIG - 40

**FIG - 41**

**FIG - 42**

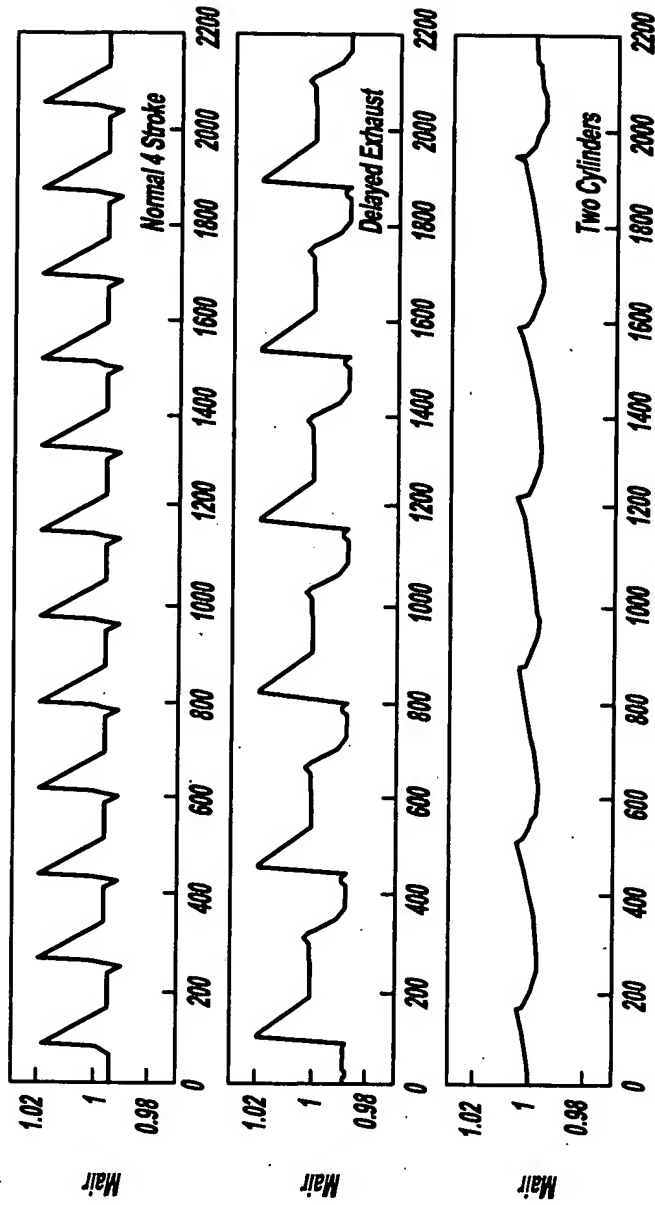


FIG - 43

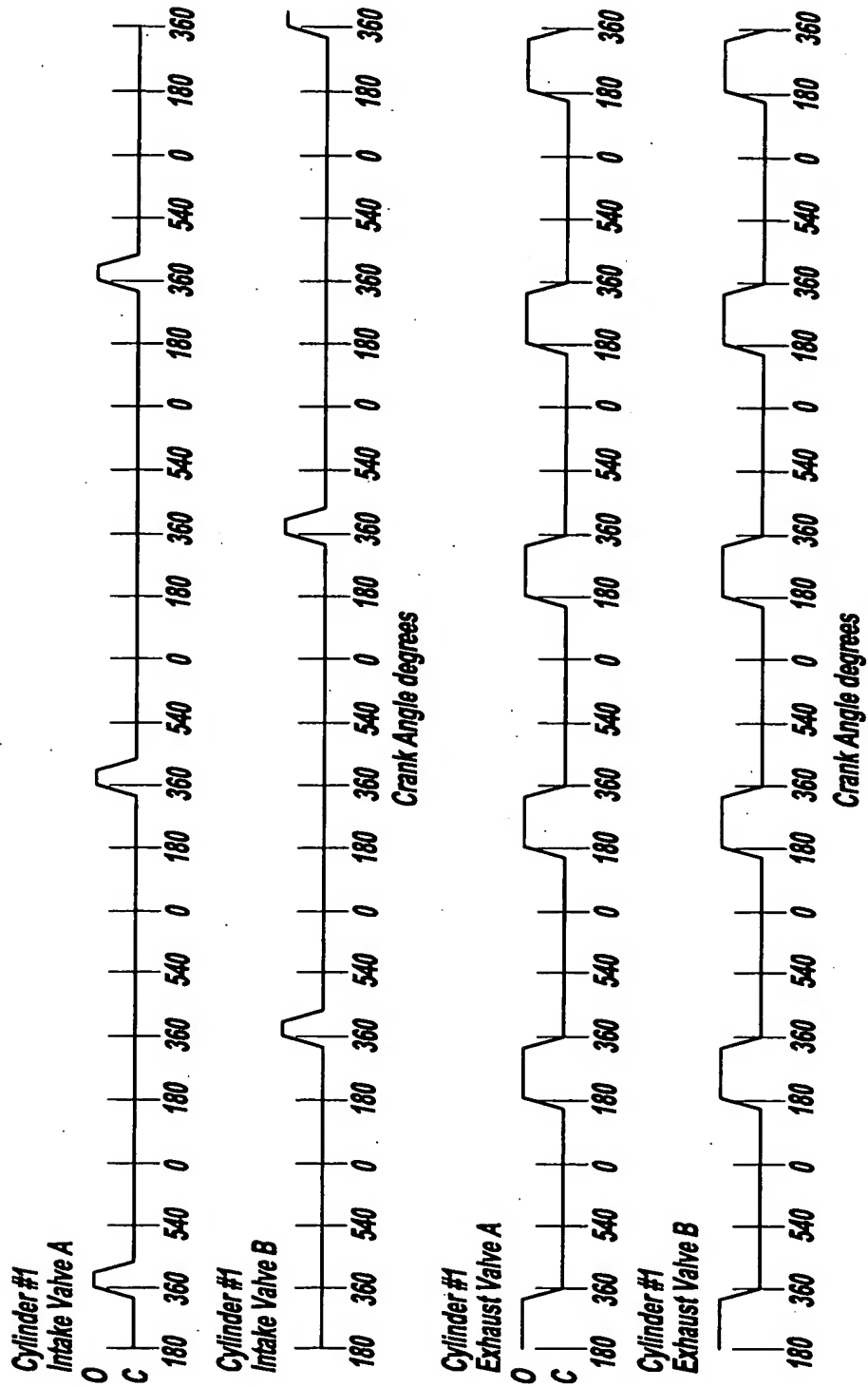


FIG - 44

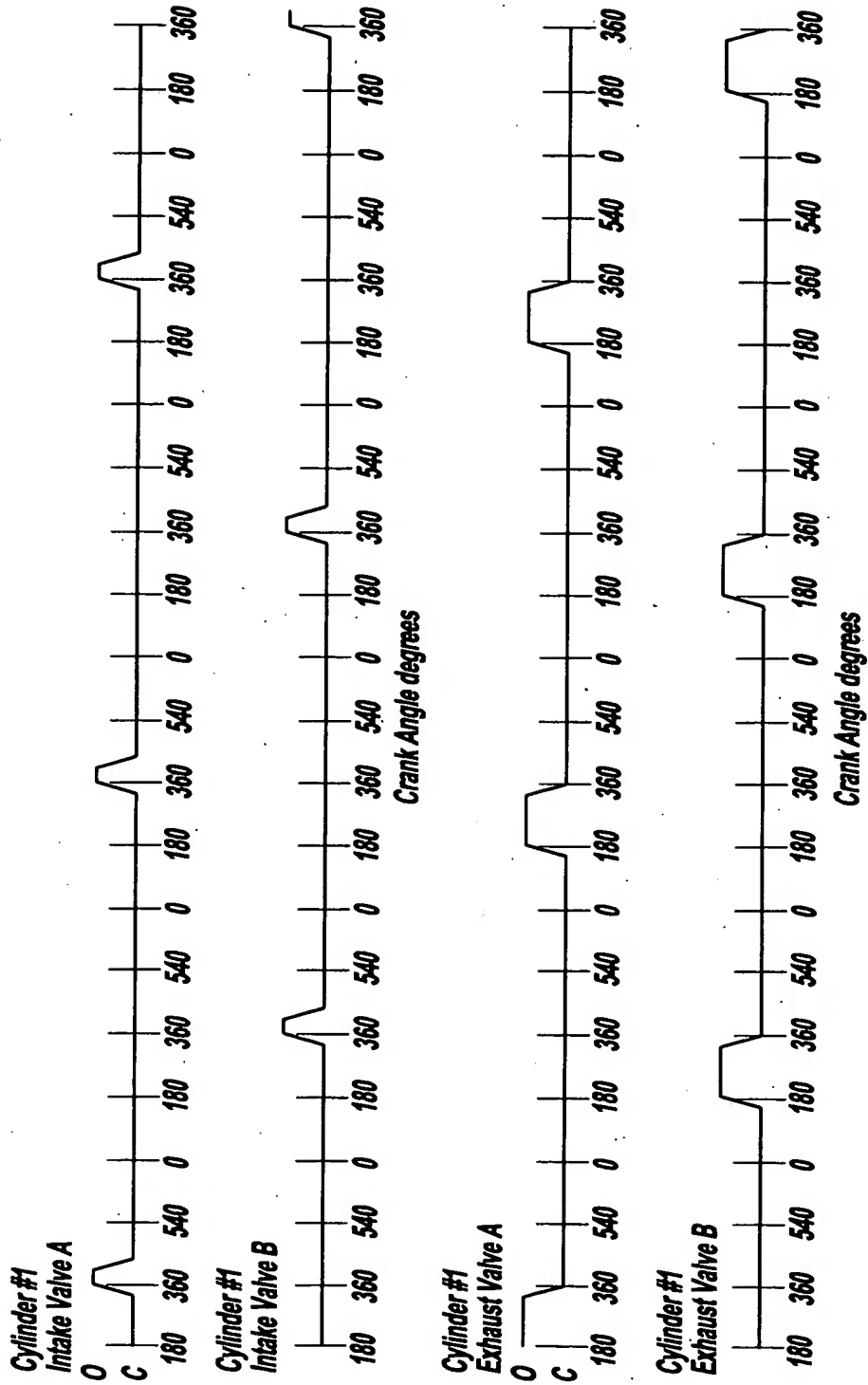


FIG - 45

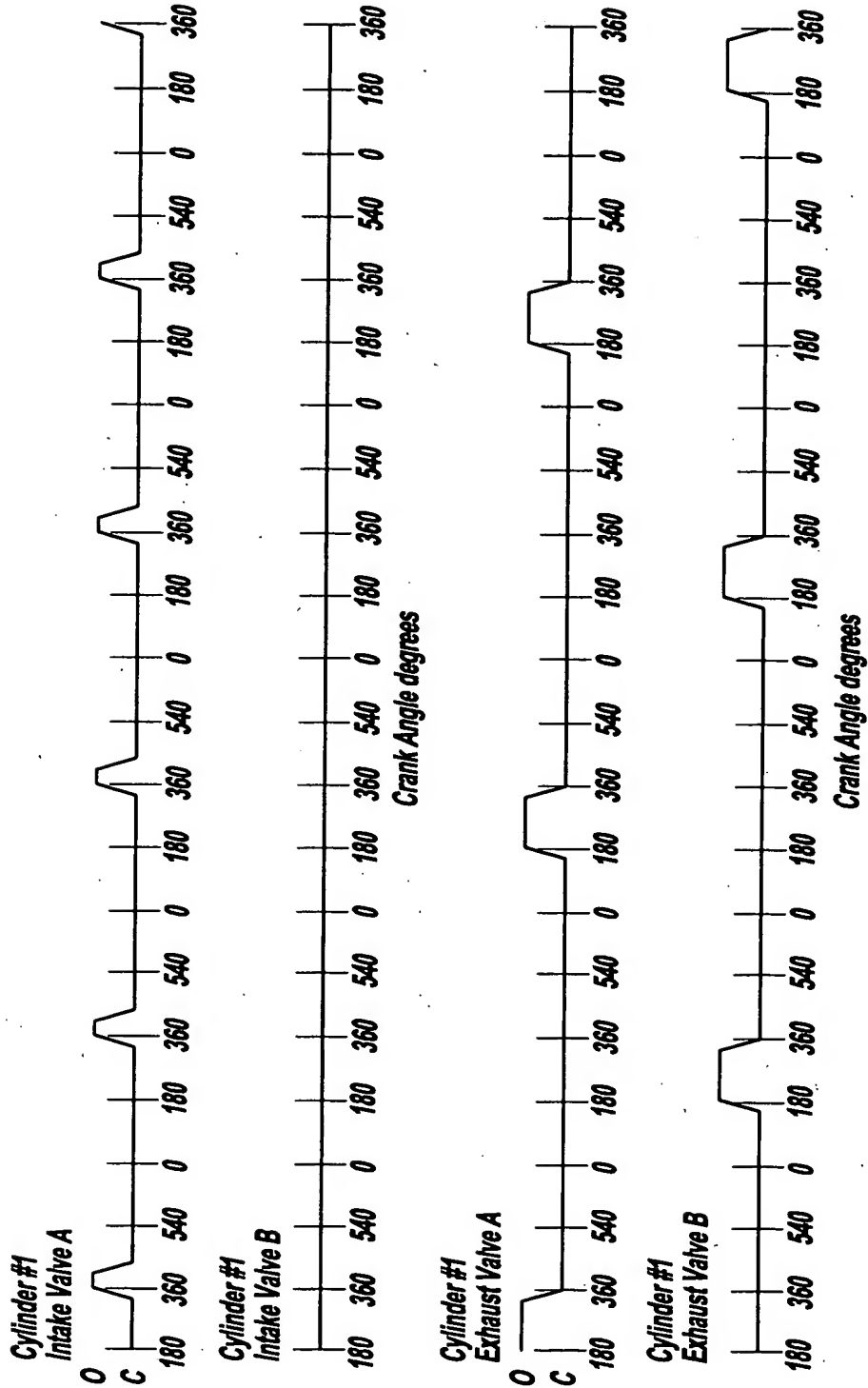
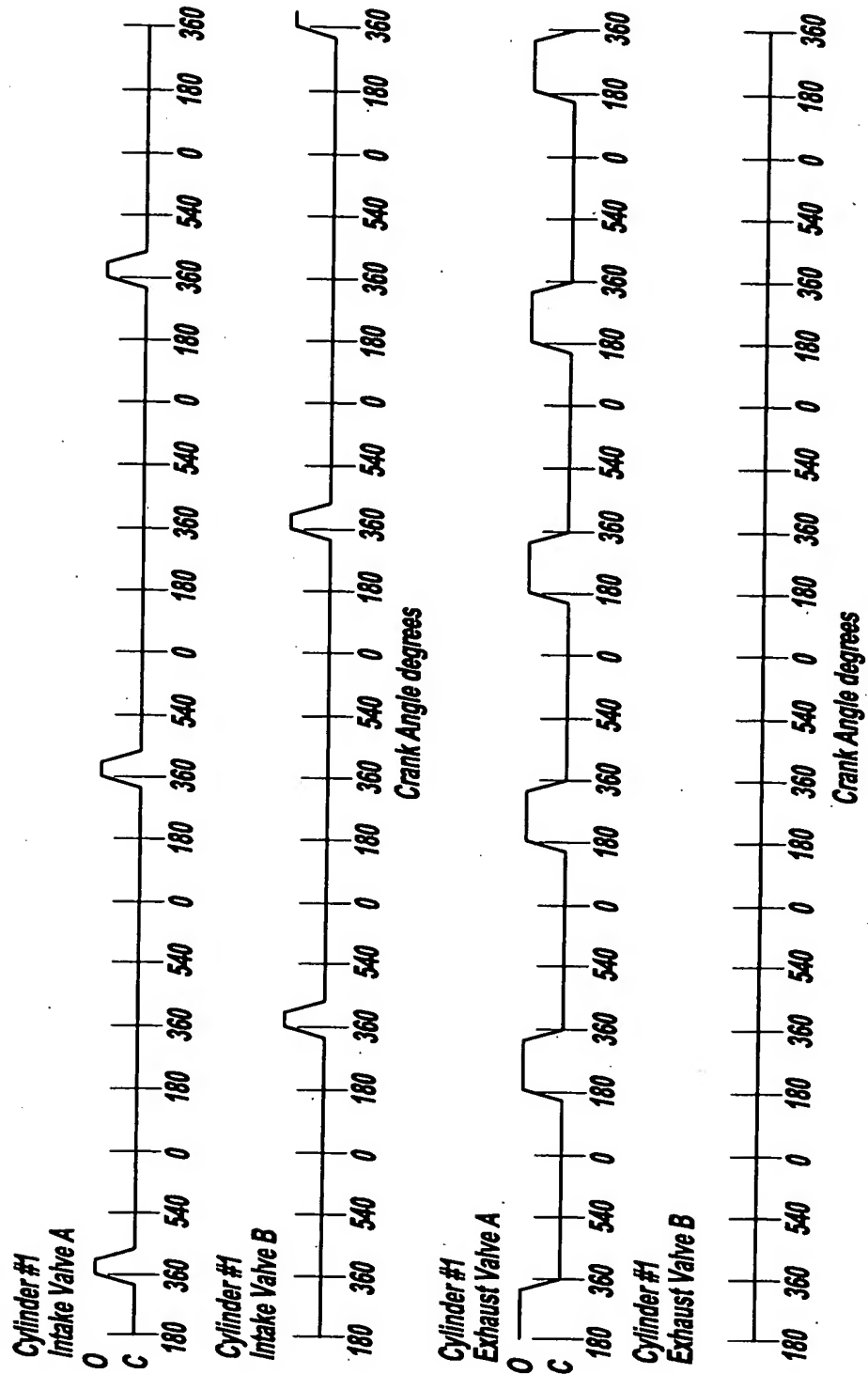


FIG - 46

**FIG - 47**

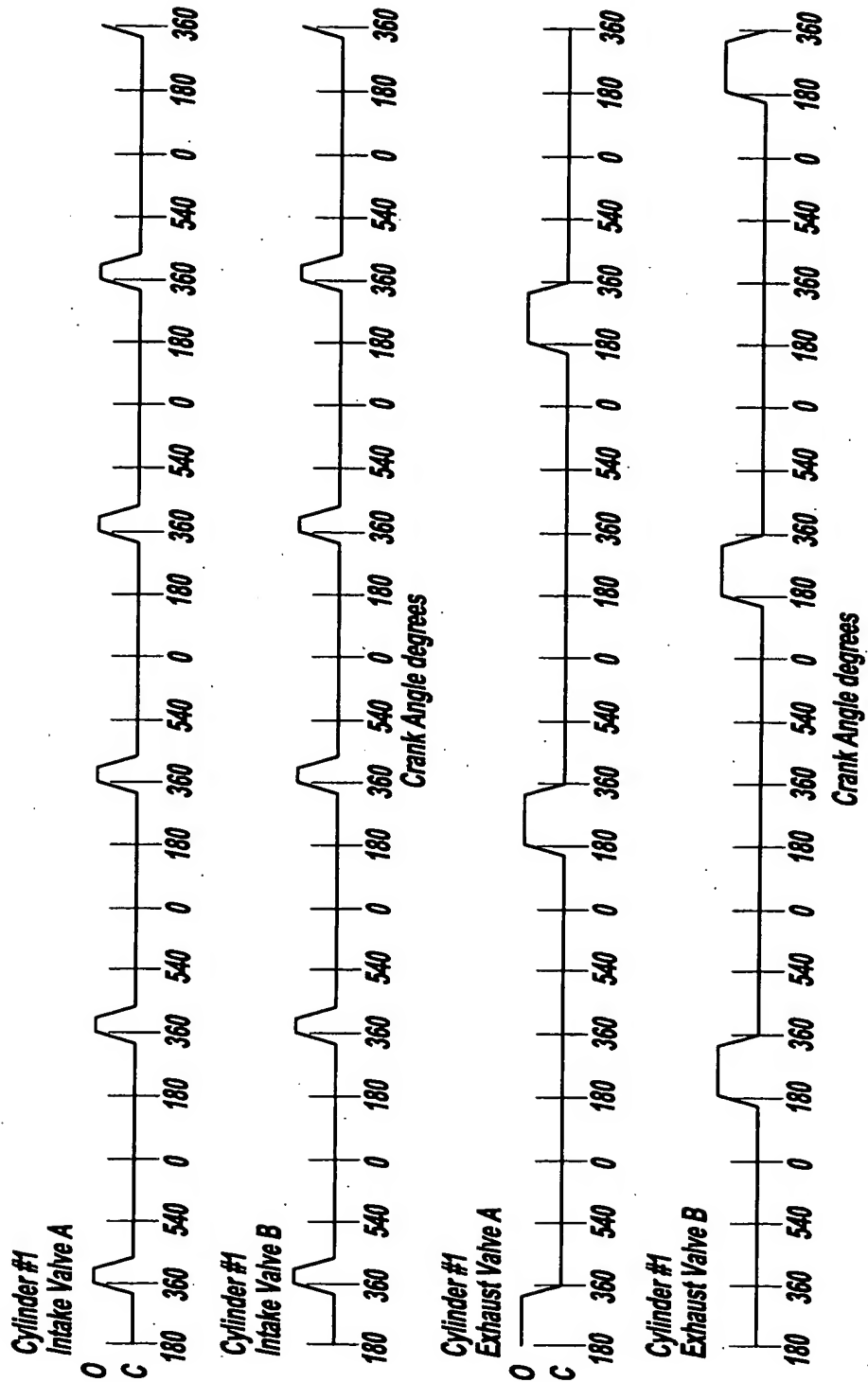


FIG - 48

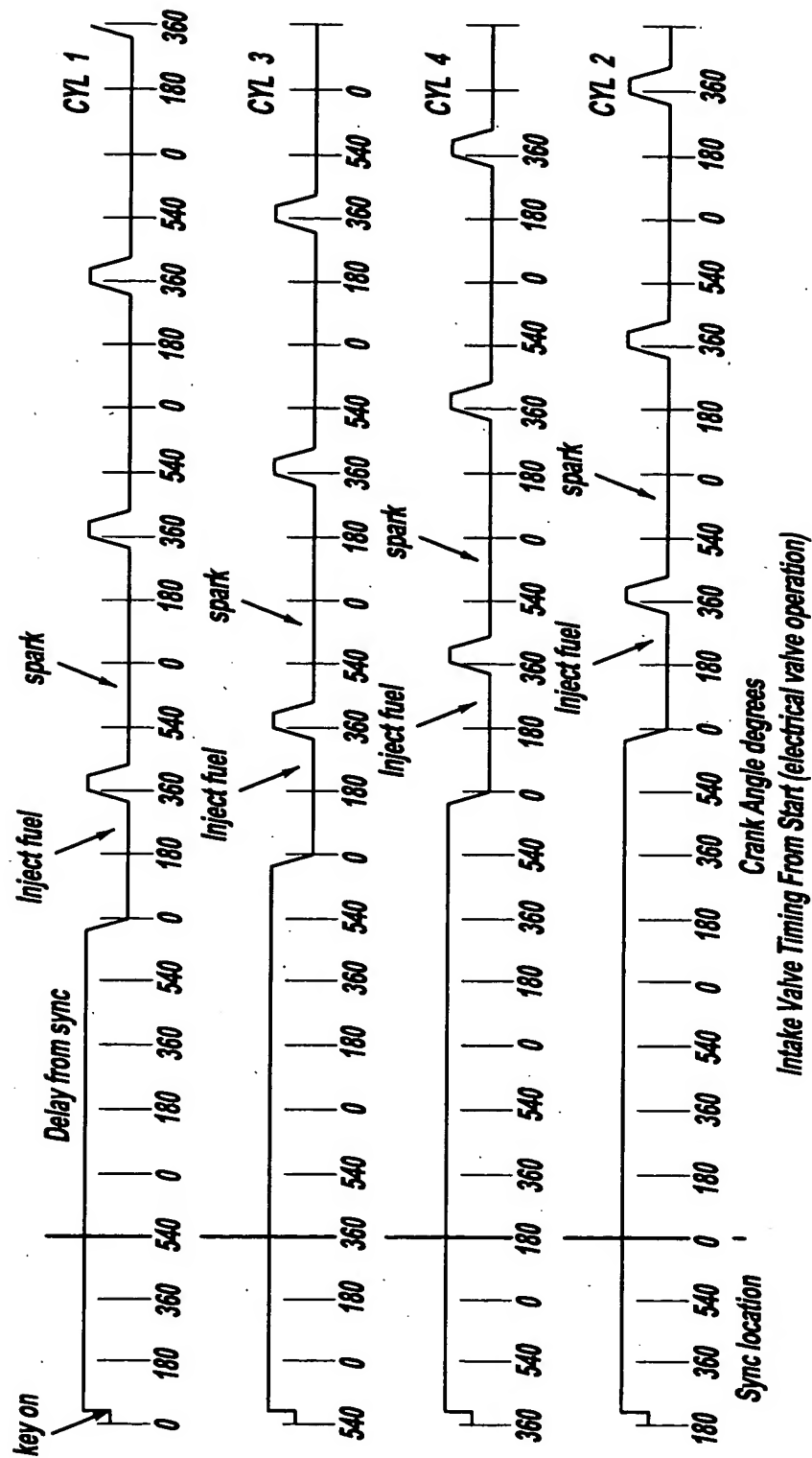
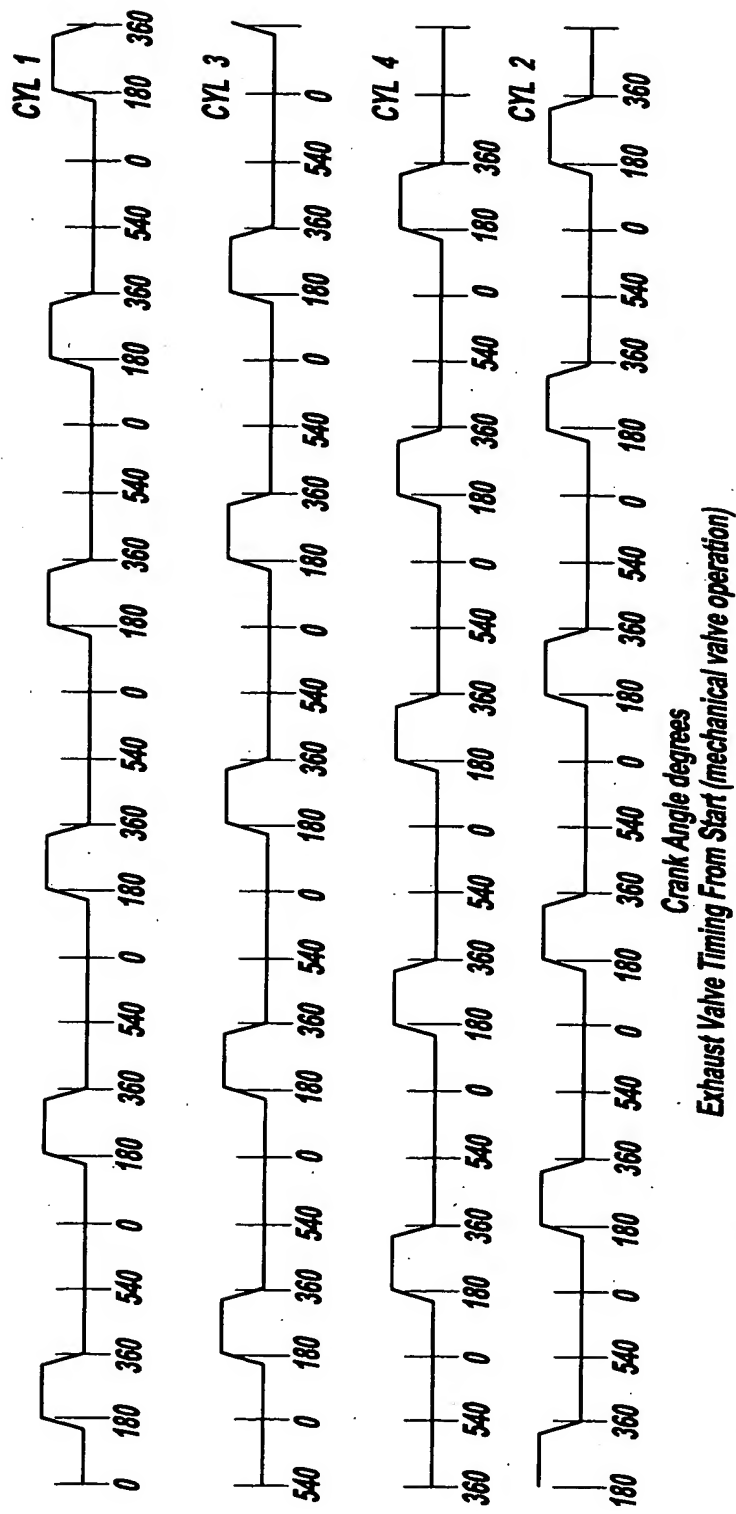
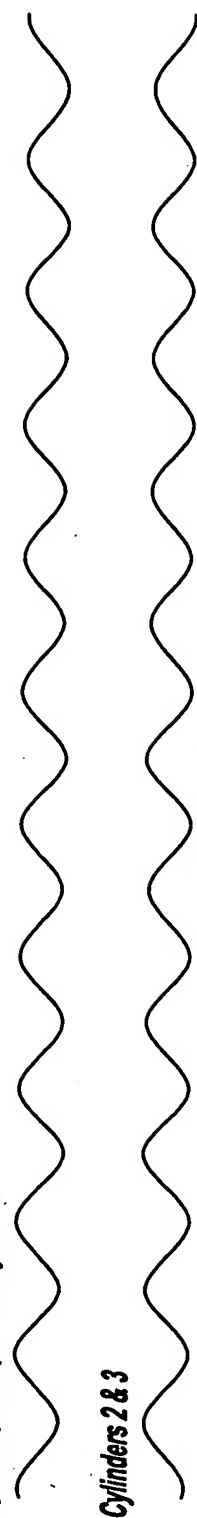


FIG - 49a

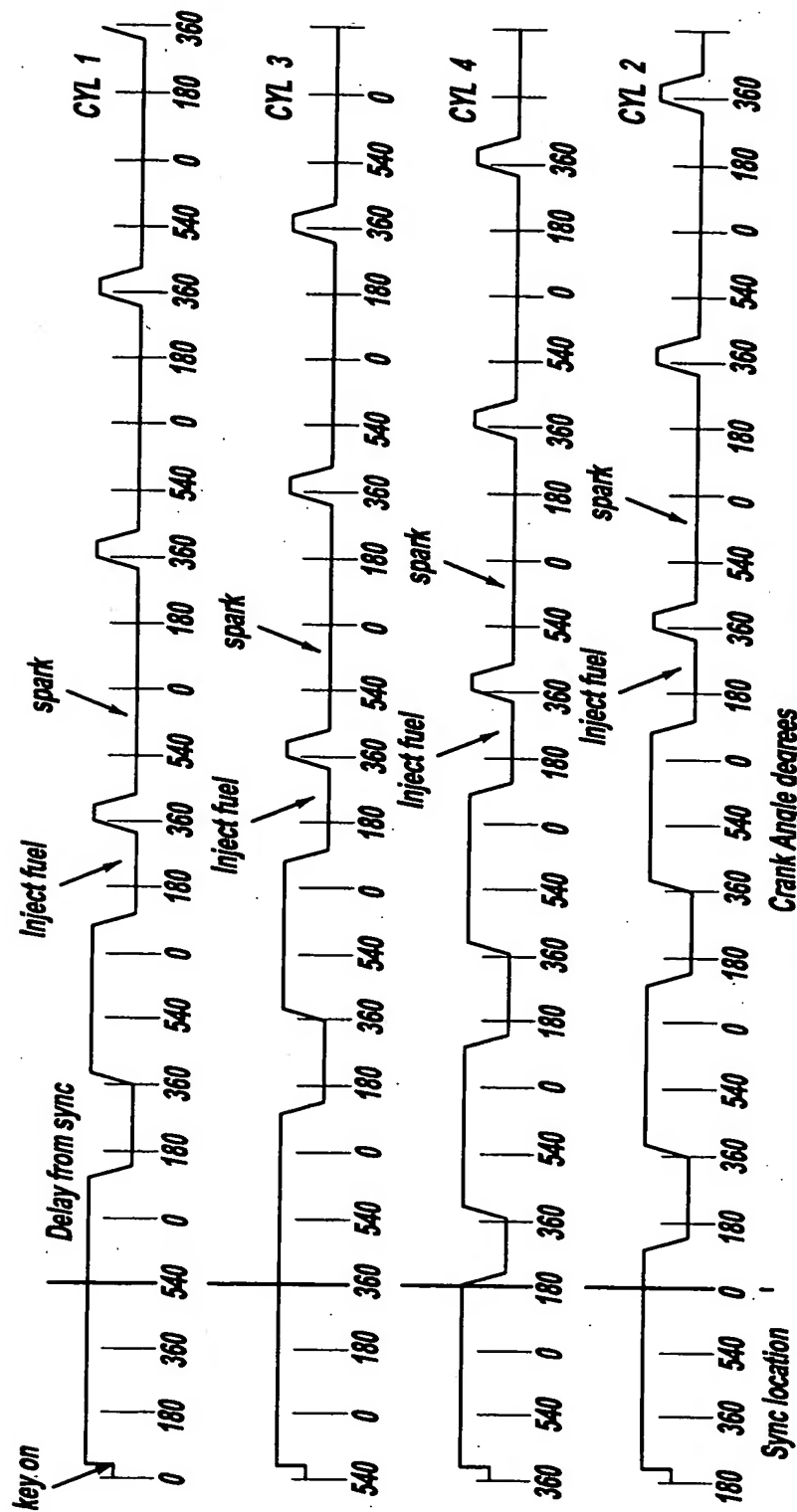


Cylinder piston position cyl 1 & 4



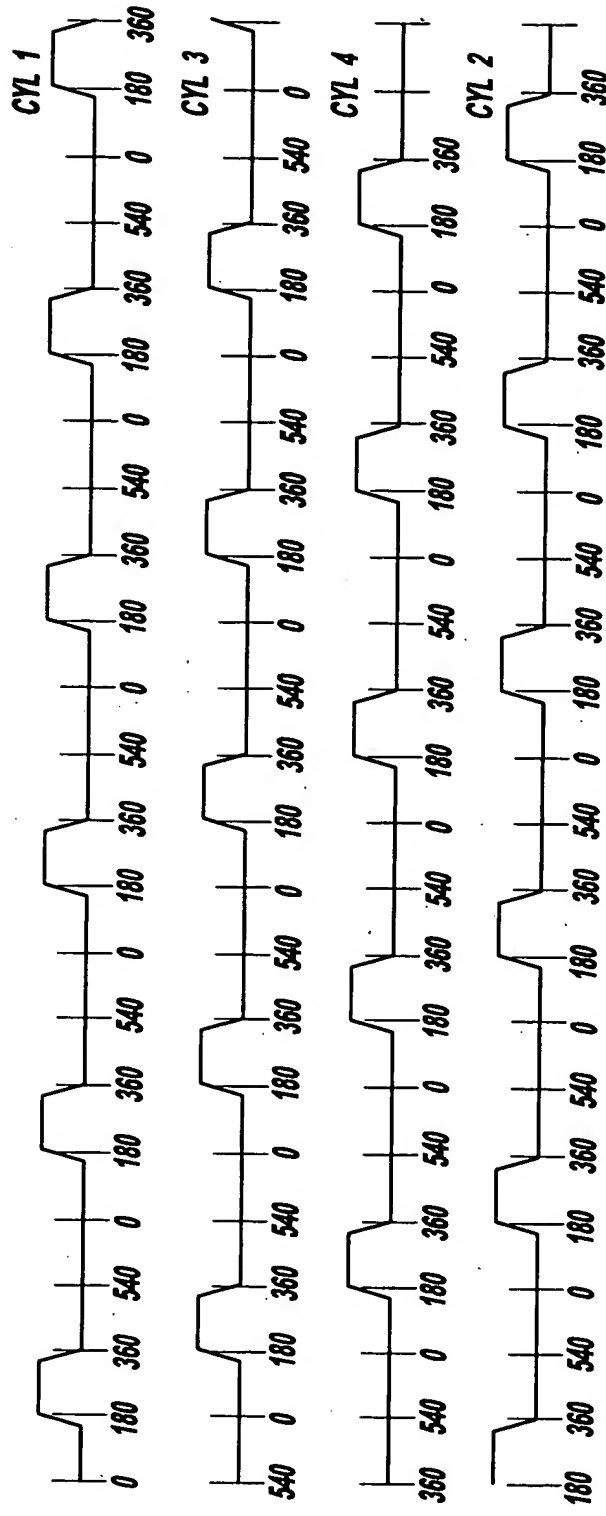
Cylinders 2 & 3

FIG - 49b



Intake Valve Timing From Start (electrical valve operation)

FIG - 50a



Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

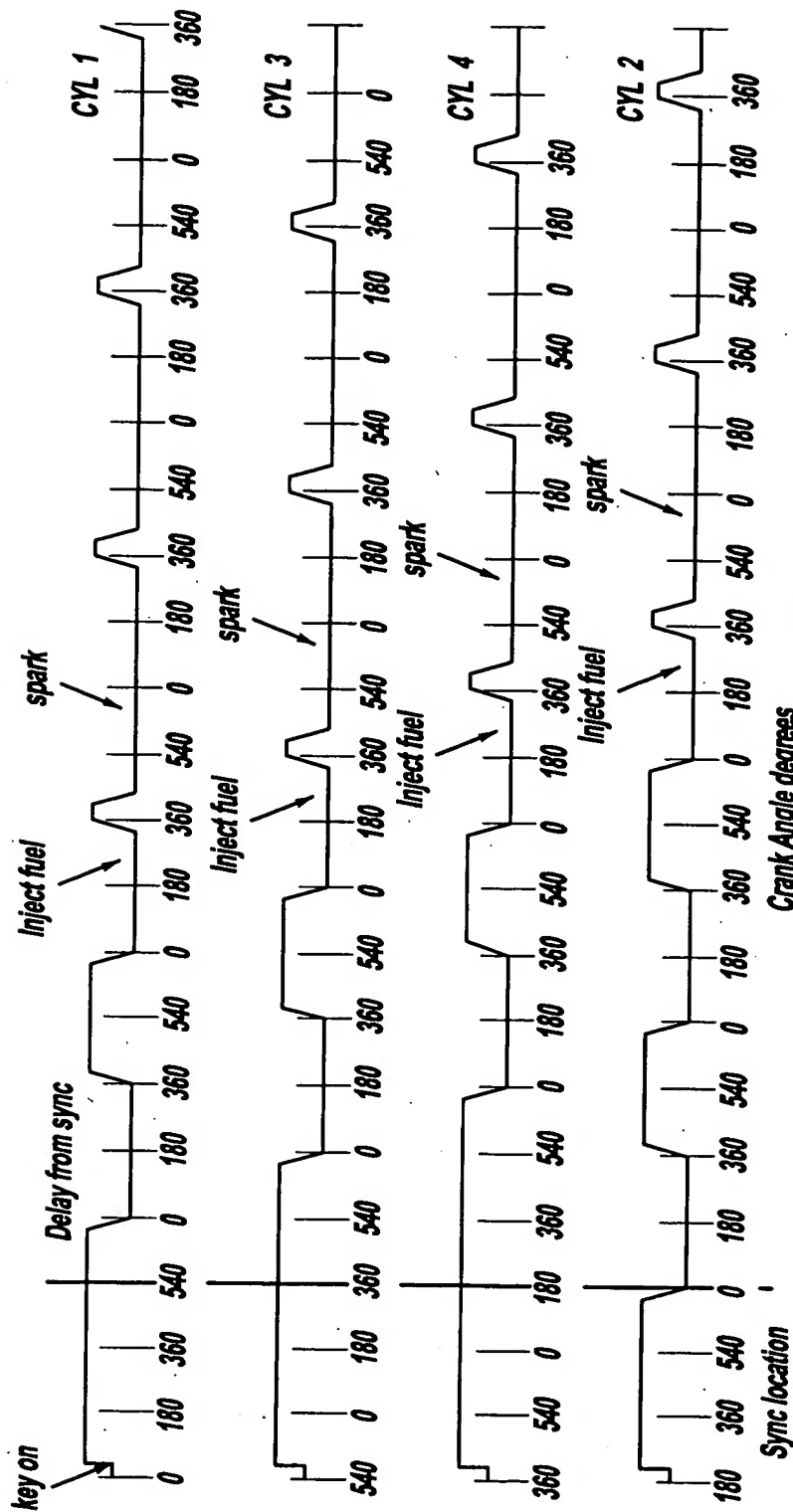
Cylinder piston position cyl 1 & 4



Cylinders 2 & 3

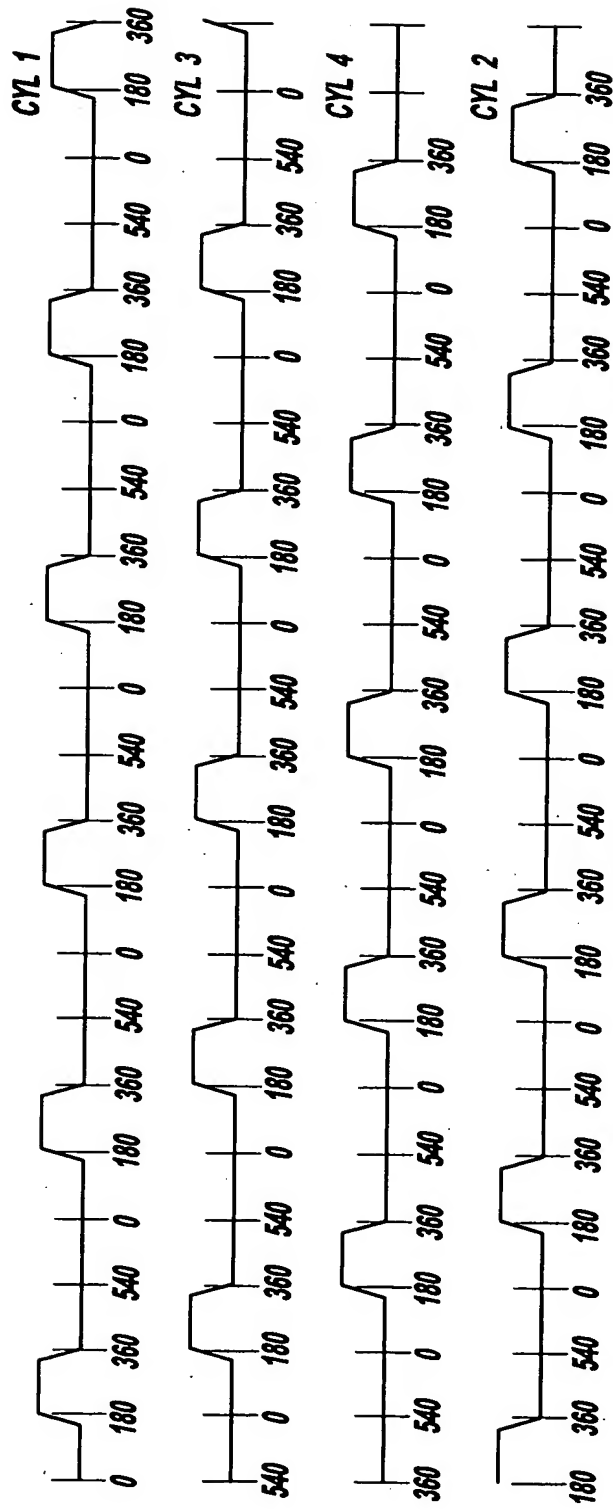


FIG - 50b



Crank Angle degrees
Intake Valve Timing From Start (electrical valve operation)

FIG - 51a

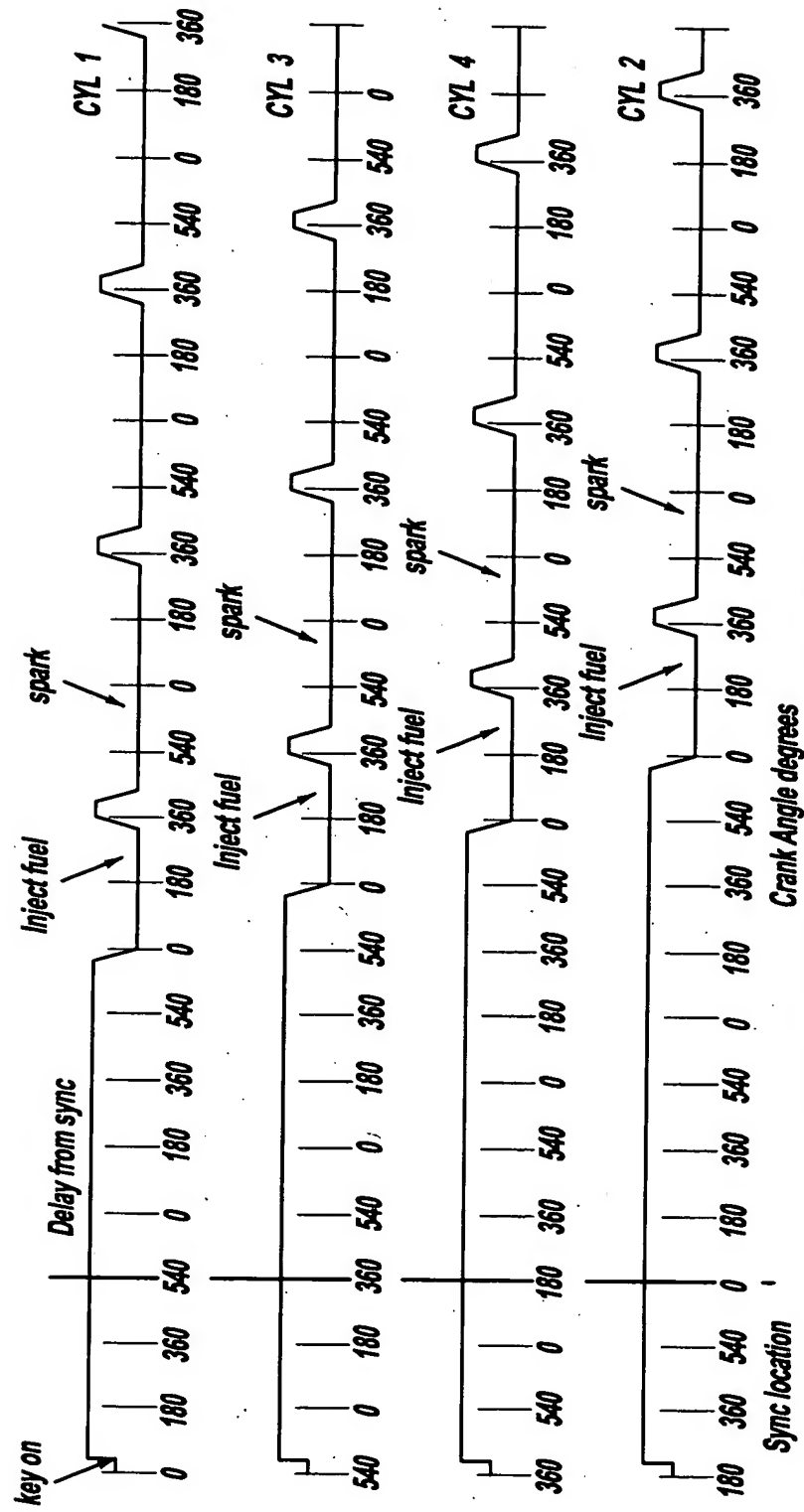


Crank Angle degrees
Exhaust Valve Timing From Start (mechanical valve operation)

Cylinder piston position cyl 1 & 4

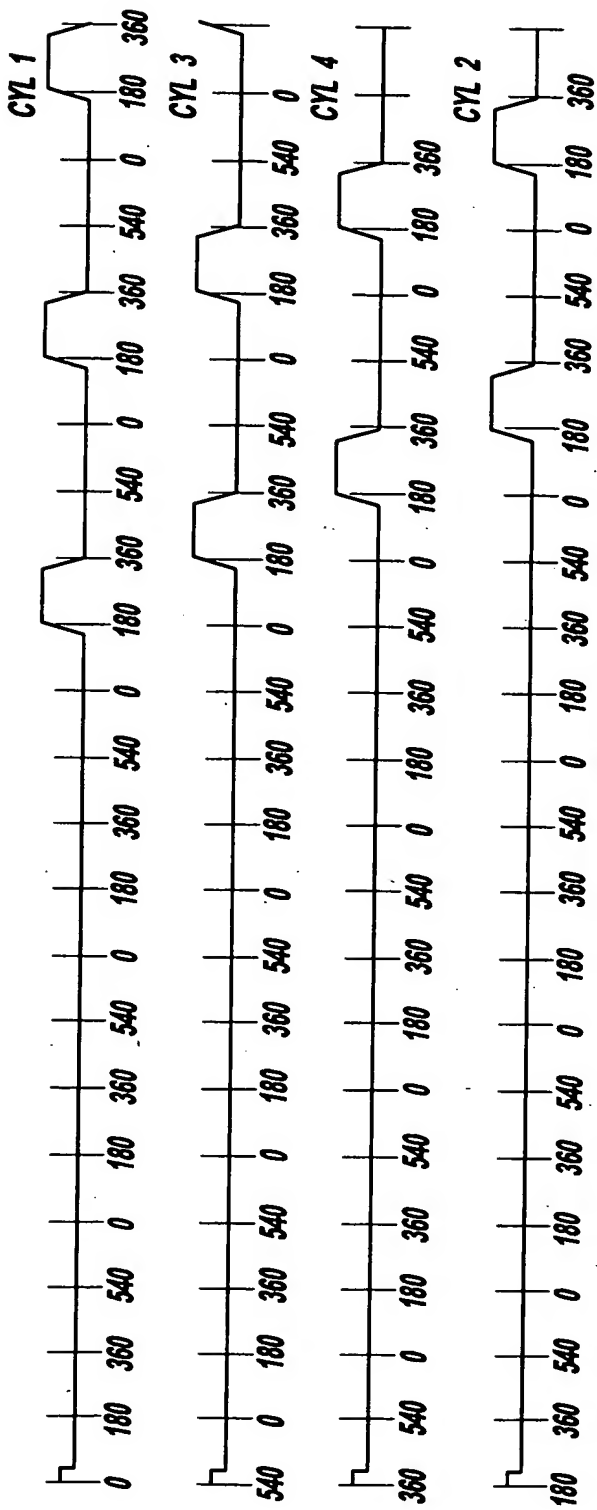
Cylinders 2 & 3

FIG - 51b



Crank Angle degrees
Intake Valve Timing From Start (electrical valve operation)

FIG - 52a



Exhaust Valve Timing From Start (electrical valve operation)

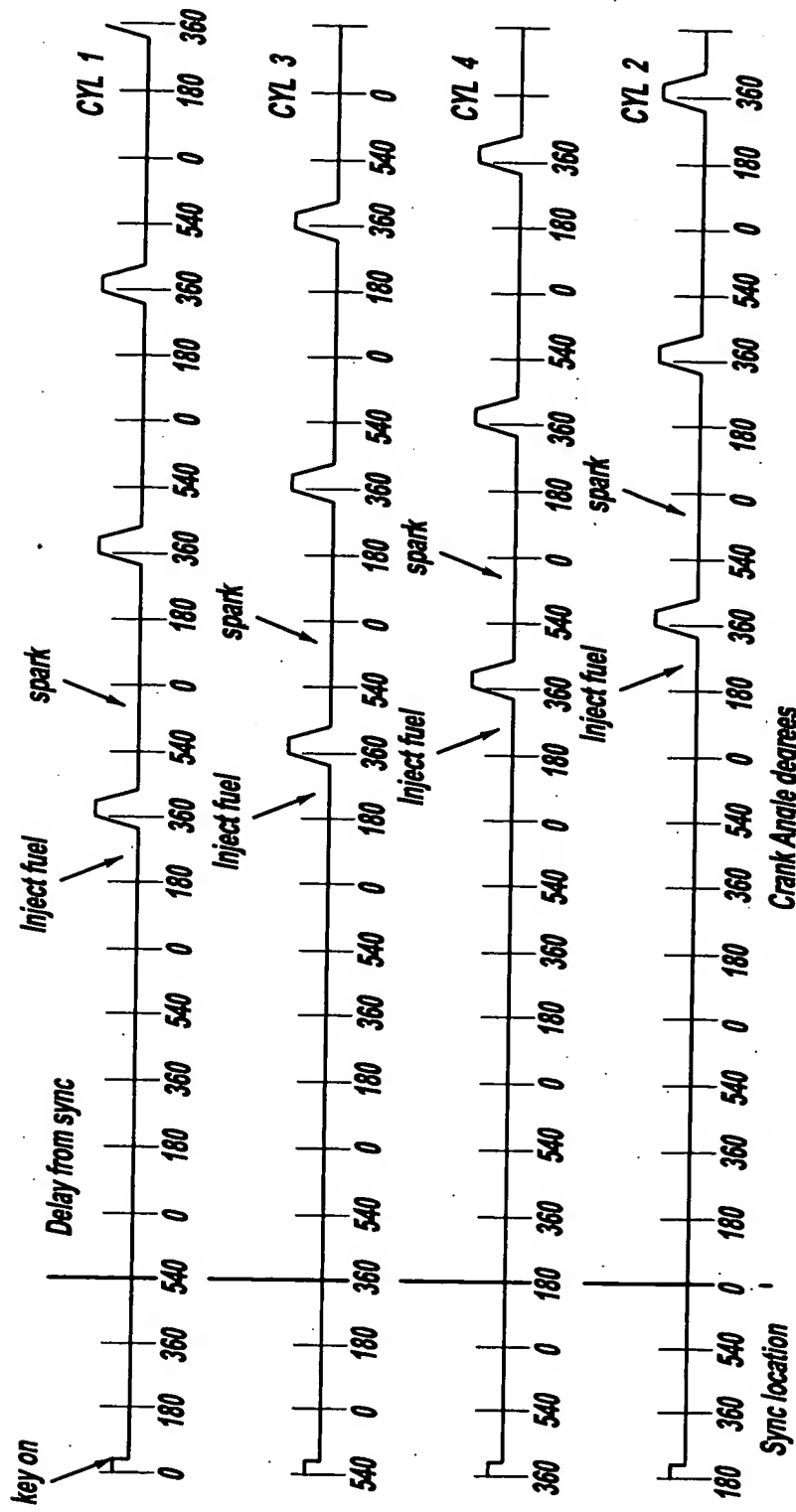
Cylinder piston position cyl 1 & 4



Cylinders 2 & 3

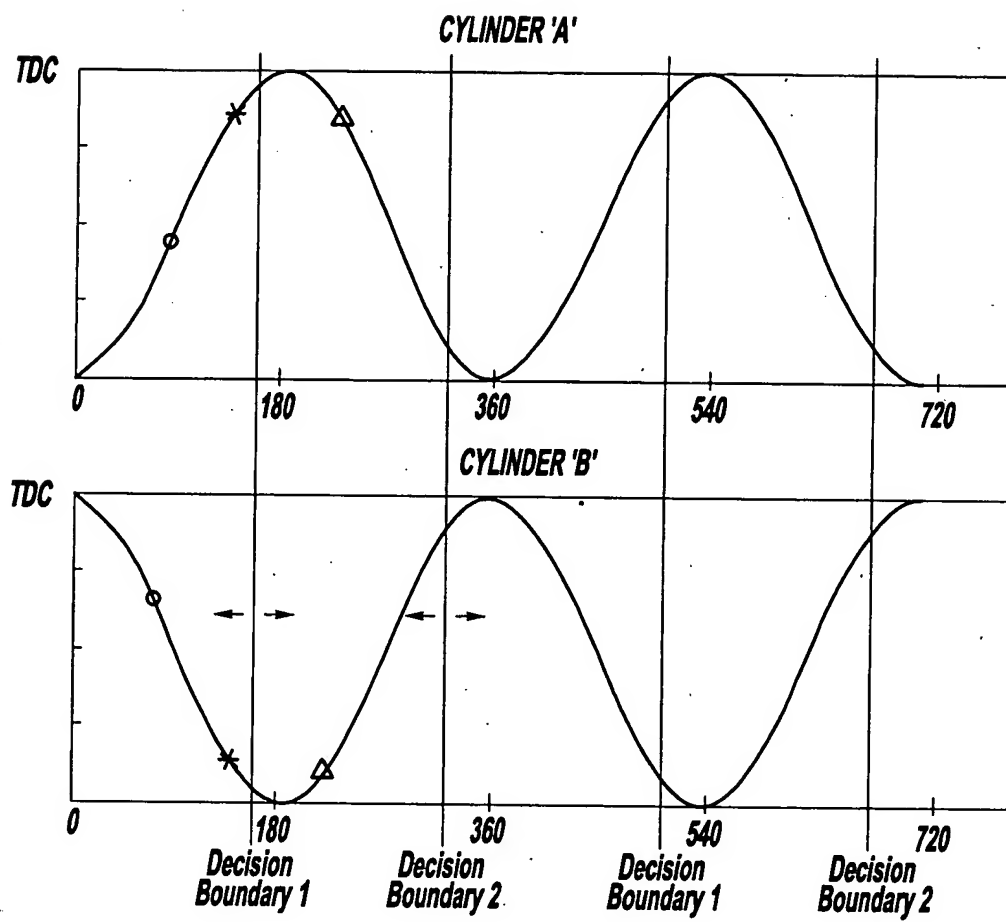


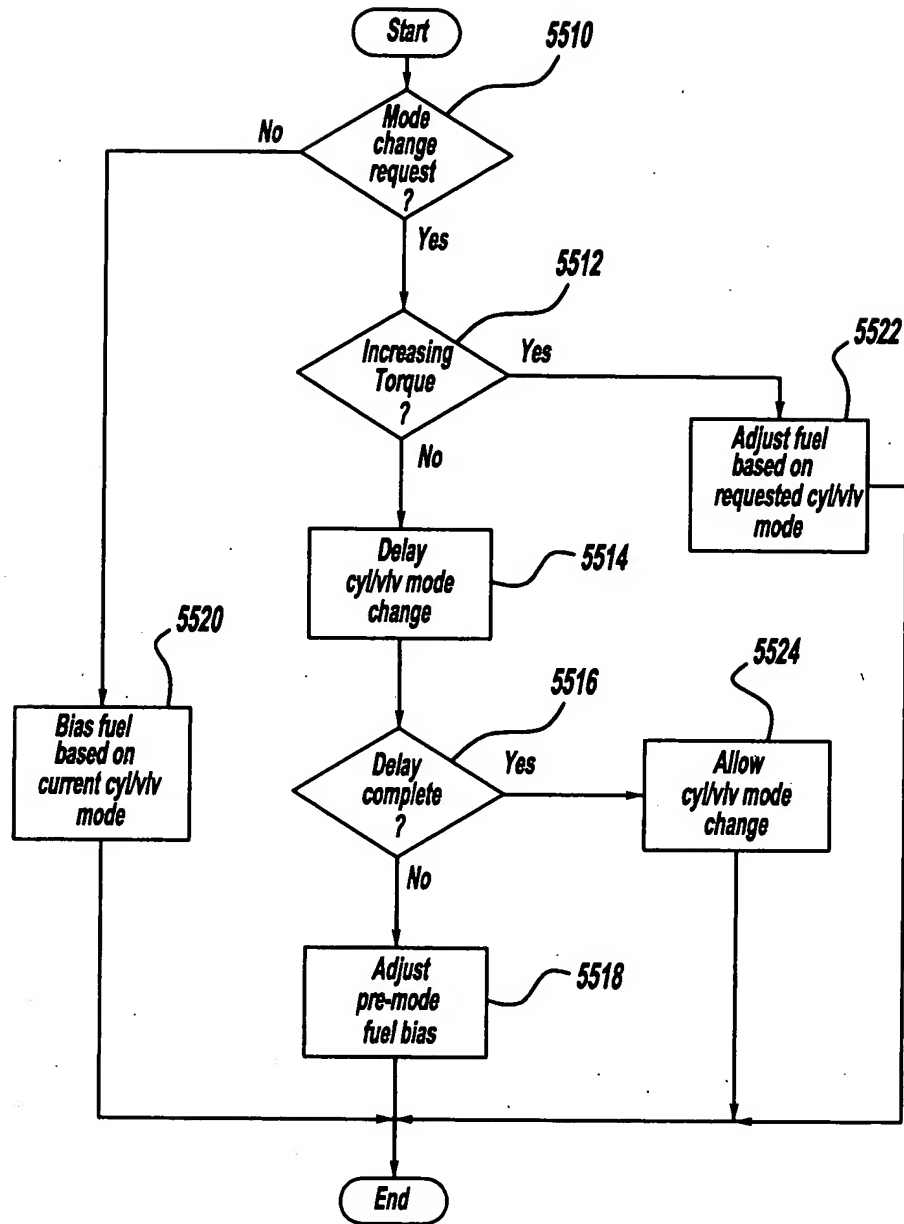
FIG - 52b



Crank Angle degrees
Intake Valve Timing From Start (electrical valve operation)

FIG - 53a

**FIG - 54**

**FIG - 55**